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THE MANAGEMENT OF PATIENTS WITH GOITER

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We are so frequently consulted by patients for advice regarding goiters that I thought it might be of interest to review the common types of goiter seen clinically and to discuss the treatment which seems indicated.

So many and such complicated classifications for goiters have been suggested that they have been confusing to physicians who see only a few patients with goiter each year. For some years, we have followed the classification of Dr. H. S. Plummer and I feel that the classification which he has suggested is perhaps the simplest and the most accurate one that we have at the present time. He thinks we see three common clear-cut types of goiter: colloid goiter, adenomatous goiter and exophthalmic goiter. He believes that nearly all patients with goiter have one of these three types or a mixture of these types. We see some of the rarer of the thyroid diseases, such as thyroiditis, carcinoma, tuberculosis, and so forth, but these occur so infrequently that I will not consider them in this discussion.

COLLOID GOITER

Colloid goiter occurs in young individuals and is not associated with hyperthyroidism. The entire gland is involved in the process and a symmetrical, "butterfly" type of enlargement of the thyroid gland occurs. The enlargement in such cases may be so slight as to produce only fullness in the neck, and again, it may produce a large goiter. The gland, on being palpated, is soft, granular, and lacks the hardness usually seen in exophthalmic goiter and the irregular nodules found in adenomatous goiter. Some patients with colloid goiter become nervous over its presence and may also have a slight increase in pulse rate and perhaps in the metabolic rate. However, after they have been placed in bed for a few days, the metabolic rate usually will be found to be within normal limits. If the increased metabolic rate persists after such patients have rested in bed, the condition usually proves to be one of exophthalmic goiter.

Collid goiter develops through the deposit of colloid material in the acini of the thyroid gland. Sections of such glands, when examined under the microscope, reveal acini filled with colloid material. The epithelial cells lining the acini are low, flattened, and distinctly different from those seen in exophthalmic goiter.

Colloid goiter is the one type of goiter which can be cured by medical management. In young patients the goiter, in most instances, can be made to disappear through the proper administration of thyroxine or desiccated thyroid gland; in young persons with colloid goiter, such treatment is preferable to operation. Treatment of this type should be used only for young individuals, and the patient should be carefully watched during the period of treatment in order to recognize hyperthyroidism if this should develop. In older patients with colloid goiter it probably is best either to leave the goiter untreated, or to remove it surgically and then to administer small doses of iodine; experience has shown that, in cases of older patients with goiters which are **not** accompanied by hyperthyroidism, it is likely that hyperthyroidism may develop when iodine is used.

ADENOMATOUS GOITER

This type of goiter probably is seen more often than any other. It, too, usually begins

in young individuals and produces a nodular, irregularly shaped enlargement of the thyroid gland. It develops through the growth of small encapsulated adenomas which usually are scattered throughout the thyroid gland and which compress the thyroid tissue as they enlarge. When palpated, adenomatous goiter usually can be recognized by the rounded or irregularly shaped nodules felt in one or both of the lobes of the thyroid gland. In younger individuals it is not associated with hyperthyroidism. After the age of thirty, adenomas frequently undergo degenerative changes, and hemorrhages occur within their capsules; then various degenerative changes follow which produce the goiters which have been referred to as cystic goiters, calcareous goiters, hemorrhagic goiters and so forth. All of these types, however, should be looked on as degenerative adenomas and not as definite clinical entities. The largest goiters seen belong to the adenomatous group and nearly all cancers of the thyroid gland develop on adenomas in patients who have reached the cancer age.

Our statistics show that from twenty to twenty-five per cent of the patients who consult us withad enomatous goiter have hypothyroidism, but hyperthyroidism is seldom seen in patients under thirty years of age. The type of hyperthyroidism seen in adenomatous goiter and, in order to differentiate it clinically from the hyperthyroidism seen with exophthalmic goiter, it usually is referred to as "hyperthyroidism associated with adenomatous goiter" or "adenomatous goiter with hyperthyroidism." Hyperthyroidism associated with adenomatous goiter is similar to that seen in patients to whom thyroid extract has been given in doses sufficient to produce hyperthyroidism. Such patients are nervous, have tremor, an increased pulse rate, loss of weight and strength, a flushed skin, sweating, an increased metabolic rate, and so forth, as do all patients with hyperthyroidism. However, exophthalmos, such as is seen in exophthalmic goiter, does not develop, nor are the patients subject to the crises which occur in exopthalmic goiter. Hyperthyroidism associated with adenomatous goiter develops very insidiously and, no doubt, in many cases often exists for a long period before patients are aware of its presence. Many patients with hyperthyroidism from adenomatous goiter consult us for heart disease which they do not associate with the presence of goiter. Hyperthyroidism seen in patients with adenomatous goiter does not, as a rule, produce as high metabolic rates as one seen in exopthalmic goiter.

We know of no medicines which will cause such goiters to disappear. In certain young persons, a considerable amount of colloid material is present in the thyroid tissue surrounding the adenomas, and when thyroxine or thyroid extract is administered, the colloid material may be made to disappear. In this way, the goiter may be made to diminish somewhat in size. The adenomas, however, change very slightly, although their presence is more easily detected by the disappearance of the colloid material in the gland.

When we are consulted by a young person with adenomatous goiter, we usually advise that the goiter be left alone until the age of twenty-five or thirty years is attained and that partial thyroidectomy then be performed. Operation is delayed until this time for several reasons. First, experience has shown that hyperthyroidism is not likely to develop in such patients, if left untreated, before the age of thirty years. Second, the thyroid gland, no doubt, has considerable influence on the physical and mental development of younger persons, and for this reason it seems best not to disturb it until full development has been attained. Third, the growths are usually multiple and in young persons the adenomas are often so small that they easily can be overlooked at operation. Adenomas, undisturbed at operation, usually continue to grow and later produce a recurrence of the goiter. The risk of an operation for the removal of adenomatous goiter, in patients who are in good health and who are between the ages of twenty-five and thirty years, is so small that it seems better for them to accept this small risk than to allow the goiter to remain and subject them to a risk of probably six to ten per cent of developing hyperthyroidism later. The size of the adenoma, apparently, has little to do with the possible development of hyperthyroidism, and we often see very active hyperthyroidism produced by a single adenoma not more than two centimeters in diameter. Patients who are seen after hyperthyroidism from adenomatous goiter has developed, should be operated on without delay, provided their physical condition will permit of an operation being performed. Unless an operation is performed in such cases, degenerative changes occur in the cardiac muscles and other vital organs and after these have become marked, even though thyroidectomy is performed, it often is impossible to restore patients to perfect health.

Patients with adenomatous goiter not associated with hyperthyroidism and those with mild hyperthyroidism, in whom no

great cardiac injury has occurred, usually can be operated on without preparation.

Those with **marked** degenerative changes in the heart and other organs, who show evidence of cardiac decomposition through dilatation of the heart, shortness of breath, auricular fibrillation, and so forth, usually are first placed in bed for a few days; they are then allowed to get up a few hours each day and are operated on without further preparation or delay. When edema and ascites are present, patients are placed in bed for a longer period of time. If the edema and ascites are slow in disappearing, digitalis in small doses often is administered for short periods. The digitalis is then discontinued and the patients are allowed to get up for a short period each day. The length of time they are allowed to be out of bed is gradually increased, and then operation is performed. Our operative mortality is lower after treating patients in this manner before operation than by preparing them by a prolonged period of rest in bed and the administration of large doses of digitalis.

EXOPHTHALMIC GOITER

Exophthalmic goiter may develop at any age, but is usually seen in patients under forty years of age. The changes in the gland are diffuse and usually involve the entire organ. Enlargement is fairly symmetrical and often produces a butterfly type of enlargement similar to that seen in colloid goiter. The gland is usually harder than that seen in colloid goiter, and, as a rule, is not nodular like the gland seen in adenomatous goiter.

Exopthalmic goiter produces the symptoms usually seen in hyperthyroidism, such as nervousness, tremor, increased pulse rate, loss of weight and strength, flushed skin, sweating and increased metabolic rate. In addition, it usually produces, if the disease persists sufficiently long, untreated by iodine, thyroid crisis and exophthalmos.

If left untreated with iodine, the disease, in most patients, tends to run a definite course, although we find that the severity differs in different individuals and in different sections of the country. Most patients with exophthalmic goiter, if the disease is left untreated, have a gradual increase in the degree of hyperthyroidism for about six months and then a thyroid crisis develops. During such periods the patients become extremely ill and often have vomiting, diarrhea, mental disturbances and a very rapid pulse. The loss of weight and strength during such periods is very marked. Crises in exophthalmic goiter may persist for from a few weeks to one or two months, and in many patients they have proved fatal. When the crisis subsides, the patient improves, and, although the hyperthyroidism persists, the patient usually gains in weight and strength and feels better in every way. After one or two years, a second crisis is likely to develop, and later, even a third or more. The disease tends slowly to cure itself but most patients, by the time this has taken place, have suffered such great injury to the heart and other organs that they are physical wrecks. At the present time, operation offers the best chance for relief of the disease.

If the operation is performed on patients who are properly prepared by iodine, early in the course of the disease, it may be done with slight risk and the results which follow operation done at this time are far superior to those which follow a late operation. The results from operation depend greatly on the duration of the disease and the amount of degeneration which has occurred previous to operation. Patients operated on before marked degenerative changes have occurred, and before exophthalmos has developed, in many instances, return practically to a normal state and are able to resume their normal station in life. The hyperthyroidism may be controlled at any time during the disease by the surgical removal of a sufficient amount of thyroid tissue, but it is impossible to restore the degenerated organs to normal.

At the present time, we know of no medical treatment which seems specific for exophthalmic goiter. No doubt, certain patients recover spontaneously, and from nonoperative treatment, but the percentage is not large and patients are likely, at any time during the course of the treatment, to develop a crisis. During a crisis, such great injury may come to the vital organs as to leave the patient a permanent invalid in spite of later operative or non-operative treatment.

Before iodine came into use for preoperative treatment, ligation frequently has been performed in exophthalmic goiter because it was found that, after ligation, patients gained in weight and were better able to withstand the high-grade hyperthyroidism which often developed after thyroidectomy. Plummer and his associates have shown that serious postoperative hyperthyroidism may practically be eliminated by administering iodine, before the operation, to patients with exophthalmic goiter. The administration of iodine cannot be looked on as a cure for exophthalmic goiter but as a highly valuable means of preventing serious postoperative hyperthyroidism. Through its use, it is now possible to perform thyroidectomy on prac-

tically all patients, without previous ligation. A primary thyroidectomy saves the patient much time and expense and often several months of active hyperthyroidism .The latter is extremely important, because, in many patients operated on after the older methods of preparation, the two or three months of active hyperthyroidism which persisted between the ligations and the thyroidectomy allowed enough injury to the vital organs to take place to prevent a satisfactory result from operation.

Through the use of iodine, the hyperthyroidism seen in exophthalmic goiter is changed and is more like the hyperthyroidism seen in adenomatous goiter or that produced in patients by giving large doses of thyroid extract. It is also possible, through the use of iodine, to cause the thyroid crises seen in exophthalmic goiter to disappear very rapidly. By such treatment, many patients who are first seen during a crisis may have a primary thyroidectomy performed within ten days or two weeks, with a high degree of safety.

As a rule, as soon as the diagnosis has been established, iodine in the form of Lugol's solution (compound solution of iodine) is given in doses of thirty drops a day over a period of from eight days to two or three weeks. Then thyroidectomy is done. On the morning of the operation, patients are usually given forty minims of Lugol's solution, in divided doses by mouth, and after the operation they are given thirty minims of this solution in the first 1000 c.c. of salt solution which is given by proctoclysis following operation. By this means of preparation, the mortality from throidectomy for exophthalmic goiter has been definitely reduced and, at the present time, is considerably lower than one per cent.

The metabolic rate gives a very accurate estimate of the degree of hyperthyroidism present at the time it is taken, but alone it is of little value as a means of determining just when an operation should be performed for exophthalmic goiter. In some patients, a high metabolic rate may exist without symptoms or signs which would lead one to feel that thyroidectomy could not be performed safely. Again, another patient might have a low metabolic rate but might be in crisis.

SUMMARY

Clinically, practically all goiters may be classified under three heads: colloid goiter, ademato us goiter and exophthalmic goiter, There are, also, combinations of these types. Colloid goiter is a goiter of youth, unassociated with hyperthyroidism and may be cured, usually, by medical management. Adenomatous goiter also usually begins in youth. In younger persons, it is not found associated with hyperthyroidism. It produces a nodular, irregularly shaped goiter and about six to ten per cent of the patients later develop a type of hyperthyroidism which differs from that seen in exophthalmic goiter. Adenomatous goiter does not respond to medical treatment and should be looked on as a surgical condition. The most advantageous time for the surgical removal of such goiters is between the ages of twenty-five and thirty years. Exophthalmic goiter may occur at any age. It is always associated with hyperthyroidsm. It responds best to treatment by operation and the earlier the operation the better the end-result. Iodine used as a means of preparing patients with exophthalmic goiter for operation diminishes very greatly the chance of serious postoperative hyperthyroidism and thus materially lowers the mortality from operation.

SOME FACTORS IN INFECTIOUS INFLAMMATION OF THE EYE

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At the outset of this talk, I am impelled to quote a remark of a recent speaker before a University Club gathering. His subject was "Some Dangers of Modern Higher Education," and the statement I refer to was as follows: "No modern institution of higher education can look with complete satisfaction upon a graduate who does not manifest certain tendencies to modify or upset things as they are today." This is another way of saying that "eternal dissatisfaction is the price of progress." In discussing things as they are today, one must steer between the Scylla of complacent stagnation and the Charybdis of destructive criticism. My theme is not new; the arrangement differs somewhat from the ordinary version. It may happen to leave some constructive thoughts in the minds of the hearers.

In considering any problem of scientific nature, it is safe to keep in mind general principles deduced from observation and experience. In the field of medicine, general principles assume value and importance directly commensurate with the elusiveness and changeable nature of living elements in contrast with the inert elements of such studies as metallurgy or geology. In the study of these, as of medicine, important roles are played by microscopy, chemistry, physics, and morphology, but with the great

difference that the units of matter, as subjects for study and investigation, are accessible and in great measure unchanging, whereas, in medical science, their investigation in the living state is almost impossible. Scientific medical studies must, perforce, accept at the outset the great handicap of all the difference between living and dead states. The crystal is consistently itself; the living cell is inaccessible; the dead cell is a vestige. As an avenue of approach to the consideration of medical problems, in spite of all handicaps, it seems unavoidable to begin with the cell.

A typical cell, the ultimate subdivision of the organism, comprises: pericellular membrane, protoplasm, nuclear membrane, nucleus; each is surrounded by fluid. Only casual observation is required to notice the similarities, emphasized by Crile and others, between a body cell an an electric battery. Each has electrolyte, a permeable cell wall, a positive element and a negative element; under ordinary conditions each is a source of energy; discharge of cell energy results in a fall of cellular potential; re-energization of the cell occurs during rest, with restoration of positive and negative potentials; ultimately, each "runs down," becoming a "dead cell," generating no more energy. The electrolytic pericellular fluid is the only avenue of access to the body cell; all necessities reach the cell, all waste products leave the cell, through this pericellular fluid. But metabolism is not a simple process. Nutrition and excretion occur in accordance with biochemical and biophysical mandates, many of which are not fully understood. By the term "chemotaxis" is indicated an uncanny power of the cell to appropriate to itself from its fluid environment what it needs, when it needs it. Vitamins, hormones, enzymes, lysins, agglutinins, bacterins, and other more or less vague substances are taking shape in the scheme of things and are beginning to shed additional light on cellular phenomena. Various groups of cells evolve each subserving special function; each special function group of cells for essentials to its own operation. Each group is predestined to mature in more or less definite sequence, according to ontogenetic and phylogenetic patterns; no group of individual cells is sufficient unto itself, but each is dependent upon the others. The sum total of all cell-group functions spells the physiologic efficiency of the individual.

The timely regression of certain essential structures such as the thymus, the evolution of others, as the thyroid and gonads, at the predestined stage, the timely and proportionate termination of skeletal growth, and all the myriad of glandular, nervous, endocrine, and psychic phenomena which we accept unnoted as "just normal"—these are some of the results of interaction of cell energies and activities upon one another. Given a departure from normal developmental sequence and balance on the part of one or more cell groups, and there may ensue mal-developments, among which may be mentioned precocity, cretinism, status thymicolymphaticus or epilepticus, family amaurosis, Friedreich's ataxia, gigantism, albinism, eunochism, or some of the less tangible, tone deafness, color blindness, sexual, religious, moral and criminal psychopathies.

Developmental disturbance is manifested by departures from, or perversions of, normal cell-destinies; in some individuals "anlage," the precursors of diploic or pneumatic bone, suffer some alterations of normal evolutional destinies during the formative years, with the result that dense cortical bone develops instead of normal cancellous or pneumatic bone; or spongy embryonic bone forms in certain areas at the age when dense certical and cancellous bone should have evolved. Such perversions of normal cell destiny occur in so-called "ato-sclerosia" or spongification of the labyrinth capsule. These changes are not inflammatory and are analagous to those seen in acute yellow atrophy of the liver, von Recklinghausen's disease and in pigmentary degeneration of the retina. As an example, the individual with abnormal pneumatization of upper respiratory structures—nasal sinuses and mastoid cells— is very poorly equipped, both physically and physiologically, to meet the upper respiratory exigencies of life. The physical handicap of subnormally pneumatized aural and nasal accessory sinus structures lies in lack of the requisite pneumatic buffers, resonators, emergency expansion and torsion spaces, lending to that part of the cranium lightness, resiliency and elasticity. The physiologic handicap of sub-normal pneumatization of these regions lies in lack of adequalte secretory, excretory and absorbtion areas to meet inflammatory and traumatic emergencies. The importance of accessory sinus and cellular equipment may be realized when one contemplates this first line of defense in infectious inflammtaory tissue reactions. Given sufficient highly specialized, epithelial structures, with a generous complement of glandular, vascular and lymphatic equipment, and space for emergency fluid content increase without undue crowding, it is possible for tremendously effective tissue

reaction to take place without undue symptoms, tissue destruction, ulceration or abcess formation. Rapid and efficient removal of noxious, infectious and inflammatory products to distant disposal structures, via the efferent vascular ways, affords advantageous opportunity for full reactive cooperation of the general protective mechanisms of immunization and of special excretory organs, such as kidney, lung and skin. When the scenery is thus set to the disadvantage of the individual, one of the etiologic factors in respiratory infectious troubles of adult life dates back in inadequate structural and architectural development of pneumatic spaces.

In the second instance, "spongification" of bony areas such as the labyrinth capsule, results in impairing of motility of the stapes foot-plate, or encroaching upon the space required for the eighth nerve, with resultant pressure-atrophy in the internal auditory meatus. Included in this general category are such conditions as osteogenesis imperfecta, osteomalacia, osteodystrophia fibrosa. Investigations of these conditions have shown disturbances of calcium, phosphorus and other ion concentrations, and additional important studies are under way through the researches of the Hooper Foundation and the American Otologic Foundation.

Another very striking category of cellular departures from normal is the allergic-anaphylactic group. No abnormal cellular evolution is seen in this group, but rather a peculiar type of tissue reactivity to ordinary innocuous agents. Allergies take widely different forms: An individual of one generation may manifest skin reactions such as eczema or urticaria to some food sensitization, one of a second generation manifesting conjunctival and nasal irritability to certain pollens, one of a third generation manifesting bronchial asthmatic reactions to animal danders, one of a fourth group reacting to wheat, or eggs or milk, for example. In the acute lesions of each of these, excessive transudation and hydrops-lacrymation, rhinorrhea, or local edema—are characteristic local manifestations of the general condition of tissue-sensitivity. Allergic studies have done much to illuminate some of the particularly dark passages of upper respiratory ills. Hives, wheals, urticarial lesions and angio-neurotic edemas appear in certain individuals unaccompanied by other evidences of abnormality, run their course and disappear, untreated and unwept. In others, there is apparent a significant succession, usually beginning with nasal and conjunctival irritations or eczema; there may ensue in one individual, asthma, sinusitis, arthritis, arterio-sclerosis and hypertension; in another, mucous colitis, neurosis or psychosis and hypertension.

We are accustomed to think of allergic manifestations as limited to conjunctival, nasal, bronchial and skin areas. It seems, however, that the gastro-intestinal, eustachian and tympano-mastoid areas are also the sites of allergic irritative and inflammatory manifestations; also, the nervous system. Many causes of acute otitis media, migraine, and gastro-enteritis present characteristics of acute allergic reactions.

Tendencies to allergic tissue-reactions are inherited according to Mendel's law; again, the scenery is set to the disadvantage of the individual of a still earlier etiologic factor in upper respiratory troubles of adult life. How much of an allergic element is present in acute infectious upper respiratory inflammations is not yet clear, but there are many indications that certain recurring acute upper respiratory infections also partake of the nature of allergic reactions; just as friction, contacting the fulminant tip of a match, sets off the inflammatory chemical reaction in the match-head sufficient to start the wood burning, so allergen, contacting the allergic-sensitive epithelium, sets off reactive tissue irritation sufficient to start up acute infectious inflammation.

The importance of dietary influences upon tissue reactions has been shown by many investigators. Evvard and his associates have demonstrated the possibility of developing, in certain individuals of a litter, paranasal sinusitis, hyperplastic ethmoiditis and sphenoiditis with edematous and polypoid degenerations, simply by deprivation of sunlight or of certain vitamin food content; and they demonstrated, further, the ability of these tissues to return to normal under the influence of sunlight and the necessary vitamins. Hemorrhagic and degenerative lesions of the periosteomucosa have long been known to occur as a result of deprivation of fresh vegetables, and to disappear under the influence of fresh fruit juices, notably citrus fruits.

This—perforce cursory—allusion to untoward effects of vicious dietary influences upon the upper respiratory tissues, brings up another early etiologic factor underlying infectious troubles encountered in later life.

Under modorn conditions of living, one must recognize in early childhood a period of several years, approximately between two and nine, as the time of average (or normal) child's beginning world contacts with foods, with environments, with indigenous infections. It is by no means true that all children manifest reactions to unprecedented

environmental contacts either in the same way or at the same age. Among these adaptations, immunity acquisitions include the so-called "infectious diseases of childhood" —but a list of the exanthemata by no means completes the infectious catalogue. It is safe to say, however, that a large part of the first decade is included in this period of immunizing contacts, and practically all normal children undergo with more or less impunity these gradual and natural immunizations. Upon his acceptance of some such fundamental conception of a period of what might be qualified as "normal illnesses," must depend the attitude of the physician in shaping up diagnosis and deciding upon treatment. Many children undergoing natural contacts with tuberculosis, streptococcus, pneumococcus and other widespread strains of infectious organisms, manifest slight and indefinite groups of symptoms, falling into the "febricula" category; others manifest symptoms referable to respiratory, digestive, or both tracts; many fall into the category of "adenoid and tonsil troubles," with or without lymph-node affections. During these constructive episodes of more or less critical nature, traumata are sometimes poorly borne and affections of apparently unrelated and remote tissues are encountered—such as pyelitis, tenosynovitis, myositis, chorea, endocarditis, aprosexia, eczematoid skin and scaly lesions, and various allergic reactions. Normally, these immunizing reactions of childhood are destined to successful termination by the earliest years of the second decade.

Before the age of maturity, the individual has demonstrated with what success his own adaptations have proved able to cope with the difficulties encountered, and his own "norm" can be fairly determined. These fundamentals of human natural history, considered in conjunction with individual history, and diagnostic study, will crystallize decisions as to what should be attempted when confronting an individual problem; and therapeutic measures fitting into the picture will naturally suggest themselves. Except in rare instances, the value of bacteriologic and x-ray findings in the commoner upper respiratory inflammations, is confined to confirming details of the physical diagnosis, and they should not be exalted to the role of indicating the surgery. For example, nothing could be further from the point than to construe extensive pneumatization revealed by x-ray as an indication for surgery. Successful local reaction is usually directly—not inversely—proportional to extent of pneumatization, other resistance factors being equal.

The factors introduced by "physiologic infectious illnesses of childhood," and the outcomes of individual encounters with them, thus assume shape as additional early etiologic factors in upper respiratory infectious inflammations encountered in adult life.

To the absence of sufficient halogen salts in certain areas, notably Tyrol, Switzerland, and cartain other parts of the country, has been attributed an extraordinary incidence of goitre. Giving the children of these localities amounts of iodine salts three or four times yearly has shown marked reduction in the incidence of certain types of goitre. Dysthyroidism, with general endocrine imbalance, is an element of many upper respiratory inflammatory conditions of adult life and must be mentioned among the etiologic factors under consideration.

The rhinologist is particularly interested in the physics concerned with physiologic operation in sinuses. Normally, gravity plays no part in sinus drainage. Yates studied the behavior of lamp-black and carmine solutions in tracing the natural routes from these areas. He observed that by action of the cilia the secretion within a sinus is rolled over and over, completely enveloping foreign particles enroute to the normal opening of the sinus. Phillips also studied this subject, using finely powdered India ink, which he observed to be miced out through the normal opening into the nasal chamber, reaching the orifice in forty-five minutes. Within the sinus, the mucosa has a very delicate basement membrane, and contains very few glands; whereas, at the nasal end of the natural openings, glands are most plentiful. As the contents are exuded from the sinus, they come into immediate contact with mucosa having cribriform basement membrane, the stomata opening into the sub-mucosal lymph lacunae, whose efferent tracts lead directly back and down the great lateral lymphatics of the pharynx. Carmine solutions emerging from the sinuses take the backward and downward direction, following a definite track in front of the eustachian orifice, between the attachment of the soft palate and the posterior pharyngeal wall; at the tongue level, the stream divides, a portion being distributed across the dorsum in the region of the lingual tonsils. In cases where bone wax was used to plug the normal opening for three days, there was evident no absorption of India ink; on removing the plug, the ink then proceeded outward from the sinus in the manner previously observed and disappeared at the former rate of speed, namely, in about forty-five minutes. Now, as to the subsequent course of the particles of lamp-

black, India ink and carmine after ciliary action has removed them from the surface of a nasal sinus, Henderson and Goodale observed that these particles of inert matter make their way between the cells of mucosa, reaching the deeper tissues rapidly, and are thence disseminated by lymph streams. Wright verified these observations, and added that surface epithelium possesses a mechanism which permits the ready passage of inert particles but which does not, under ordinary conditions of health, permit passage of living particles, such as germs. He examined mucosa from coal regions, which showed coal dust passing the mucous barriers readily, just as did carmine granules in the experiments of Hendelsohn. From these observations, and the finding that micro-organisms readily pass these same epithelial barriers in disease, he deduced that "there must be something beyond mechanical obstruction which, under ordinary conditions of health, keeps the tissues beneath the epithelium free from the bacterial life outside the epithelial cells." In the work of Mudd, there is much evidence to support the following statement: "The shock of an injury, upset of neuro-vascular balance by profuse hemorrhage, even lesser physical or psychic trauma, increased hydrogen ion concentration or shock of cold to the surface, may disturb conditions sufficiently to open portals to infection."

Wilson pointed out that the movements of small particles of inert matter upon liquid surfaces represent mass adjustments to surface tension. Much physiologic speculation and thought has been devoted to the phenomenon of the stilling of this "Brownian motion" by spraying the surface of contact with a nebula of oil, or by a film of soap bubble. The change is of the nature of the result of "oil upon troubled waters." The occurrence of neutral fats, lipoids and soaps in and upon body cells is commonly observed and Wright has made the pregnant suggestion that "a minute coating on an epithelial of a lipo-proteid of proper surface tension suffices to repel a bacterium; one with a bad index allows bacteria to pass." It is not difficult, nor is it inconsistent with certain known bio-chemical facts, to conceive a combination of natural circumstances of etiology along the lines indicated by these suggestions culled from the work of Hendelsohn, Mudd, Wright and Wilson.

Given an etiologic shock—either toxic, traumatic, thermal, emotional or mixed,—nerve impulses disseminated via the sympathetic distribution initiate glandular, vascular, and electrolytic changes throughout the organism, characterized by altered secretions, altered local and general vascular balance and pressure, altered hydrogen ion concentration upsetting the alkaline reserve and super-inducing local and general acidosis, alteration of **inter** and **intra-** cellular neutral fats with resulting change of surface tension on various epithelial and endothelial cells. Such a train of changes brings about upsets of pre-existent quiescence between tissues and organisms, precipitating acute bacterial inflammations of upper respiratory, lower respiratory, gastro-intestinal, and genito-urinary tracts, manifested clinically by acute inflammations, such as rhinitis, bronchitis, gastro-enteritis, pyelo-cystitis. How often does one hear the "caught cold in the bowels" or "in the kidneys" and how meaningless have such expressions been! On the conception of a mechanism of etiology such as this, one can understand how chilling of the ankles might set up a pyelo-cystitis, enteritis, or inflammation of the antrum, the severity or mildness of which would depend upon the virulence or attenuation of the organisms present at the moment. There remains much to amplify this concept before clearing up the reasons for tissue breakdown in acute infectious inflammation. Why do we find localized tissue breakdown en masse on one arytenoid in the course of tuberculous laryngitis and no ulceration on the other arytenoid, for example? Exposure to relatively greater degrees of traumatism undoubtedly plays a part in the determination of ulcer formation; the relatively greater inherent strength and tolerant qualities of certain tissues as compared with others immediately contiguous undoubtedly also plays a part, as must the circumstance of the particular bacteria present—witness the characterization of certain strains of streptococci as "non-pyogenic," of others as "pyogenic." Within this terra incognita one must include unknown factors whose very numbers and variety are so indefinite as to have prompted Wright's descriptive phrase "that concatenation of circumstances which constitutes the practical etiology of Nature."

In view of the nature and multiplicity of etiologic factors involved in inflammatory tissue-reactions, it seems that the crux of many problems of acute infectious inflammation is not so much the actual invasion by pathogenic and toxin-producing bacteria, but rather certain tissue-conditions determining or predisposing to their invasion.

Civilized existence includes a practically universal dissemination of pathogenic organisms, many of which carry their bacterial "stow-aways" with impunity a large part of

the time. Certain organisms **may** be capable of setting up infectious inflammatory reactions by mere contact alone, regardless of the condition of susceptibility or resistance of the individual at the time; this is not stated as an established fact, but simply as possibility that certain disease-producers are endowed with especially high capacity for infectious insult—sufficiently effective to get by the physical and physiologic defenses of tissue despite conditions of full normal health and well-being. Even should this be granted, it is certain that such super-effective attack is characteristic of very few organisms. Typhoid, diphtheria, tubercle, staphylococci, pneumoccocci, ordinary streptococci, spirilla, and numberous other bacteria live, eat, sleep, work and play with human beings constantly without interrupting the course of continuous good health. Only when something additional turns the scale in an individual is the state of equilibrium upset between tissue-resistance and bacterial invasion, determining the onset of infectious inflammatory reaction. This "something additional," be it fatigue, trauma, emotion, exposure, intoxication, or any combination of these or other influences, attains, for the time being, the dignity and importance of catalytic agency, and, as such, comes into the front rank of etiological factors. In this front rank, it finds itself shoulder to shoulder with other etiological factors of upper respiratory infectious inflammations. Some of these have been alluded to in this discussion, which is offered in the hope that it may be of help in negotiating the difficulties presented by these cases.

THE NEGLECTED PERFORATED APPENDIX

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(Read before the New Mexico Medical Society, at its Forty-Seventh Annual Meeting, at Taos, New Mexico, June 12-14, 1929.)

Fifteen years ago it seemed that the last word in the treatment of appendicitis had been spoken. The almost universal advice was, "Grub out the appendix as soon as the diagnosis is made." And what pitiful results have followed!

Of late, renewed interest has been taken because the profession has awakened to the appalling yearly mortality of 25,000 from acute appendicitis in continental United States.

The tables (Table 1.) here presented show the mortality according to government statistics. These are not pleasant to contemplate—especially when the writer comes from the state having the highest mortality rate.

Where does the responsibility lie? Largely in family ignorance, somewhat in the family physician and, lastly, in poor surgical judgment.

When the combined efforts of family intelligence, keen physician and skillful surgeon are present, the mortality is practically zero—for the offending appendix is removed before rupture has occurred, the abdomen is closed without drainage, and recovery is prompt and ideal.

How different when perforation has supervened! Shall we operate at once? Usually, if perforation has occurred within twenty-four hours of the onset of the disease, this is the safest procedure. There must, however, be a careful consideration of other factors. Is the patient dehydrated? Is he suffering from hypochloremia? In other words, is he too toxic to be a risk for immediate operation?

One of the saddest pictures in the whole problem is that only too frequently the acute appendicitis case has been given a cathartic. When this is vomited, he receives another dose. Apparently, increased vomiting demands increased cathartics on the part of the anxious but ignorant relative. And only too often this treatment is encouraged by the physician. From statistics it has been proven that a great majority of all serious cases have been given a cathartic soon after the onset of the disease.

Catharsis not only violates the first principle of abdominal surgery—rest—but it contributes to rapid dehydration.

It has been estimated that about seven quarts of normal secretion is formed daily in the upper intestinal tract. Vomit this up and how great the demand for more fluids! The waste of chlorides in vomitus often produces a loss of more than fifty per cent of this vital chemical in the blood. Add to this the strain of vomiting, with further loss of fluids through perspiration induced by the act.

In spite of such a picture, suppose we further assault the patient with anesthesia and operation. Then we almost invite death in our patient.

Our greatest hope in the neglected patient lies in control of vomiting, restoration of water and salt balance to the body, and operation when, if, and as, the proper time comes.

To control vomiting the stomach tube frequently used is our sheet anchor. When inserted properly, it causes very little distress. After its use, the patient soon learns to beg

for it when hiccoughs or nausea returns. The retained duodenal tube may be tried for its constant drainage effect. Sometimes it is very efficacious. Its presence often disturbs the patient.

Water and salt balance must be restored as soon as possible. It is safe to give two per cent salt solution beneath the skin. The veins will tolerate as high as five per cent solution, if given slowly; that is, not more than 500 c.c. per hour.

While a laboratory is not always available for testing the salt content of the blood, we can at least give normal saline after the first large dose of salt solution. Normal saline should be given in large enough quantities to total 6,000 c.c. in twenty-four hours.

The real guide is clinical observation: the cleaner and moister tongue, the better facial expression, better pulse and increased urinary output. Of course nothing is to be given by mouth, (excepting the stomach tube). During this stage, I rarely give saline by bowel, either in quantity or by the Murphy drip. The patient has enough discomfort without a sore rectum.

Sometimes, in long continued cases, food may be a question. This is readily solved by giving glucose with the saline.

The progress of the case is often gratifying, even though desperate in the beginning. Soon, as improvement in the general condition manifests itself, we wonder when to operate. There is one decisive answer: Don't be in too big a hurry—so long as the patient continues to improve.

It also seems to be a very common observation, that operation between the second and sixth days following the beginning of the acute attack is the most dangerous. This appears to be the result of other factors besides dehydration and hypochloremia: First, the individual has not had time to develop an immunity to spreading infection; and, second, tearing the lymphatics during operation before they have developed their defensive mechanism seems to spread infection.

OPERATION

Whether operated early or late; whether the acute appendix is ruptured or unruptured, gangrenous or with localized abscess or general peritonitis, I proceed with the operation as follows:

Anesthesia—local until the peritoneum is opened, then gas-oxygen during the intraperitoneal manipulation. I prefer the old McBurney gridiron incision, made well out toward the ilium. This incision presupposes a correct diagnosis. Its advantages are that, should pus be encountered, it is reached from the side with the minimum danger of disturbing protective adhesions.

The appendix can be removed in practically all cases. There are times when it should be left alone—when it cannot be found without pawing over the intestines or tearing the adhesions to a dangerous extent. In other words, the appendix should be removed when possible by using extreme gentleness.

No sponge is allowed within the peritoneal cavity; nor is the cavity irrigated. We are only too prone to forget that the intact peritoneum is highly resistant to infection. Why, therefore, should we denude more gut by sponging, or wash more infection into the lymphatics by irrigation?

Leave the pus alone. It will run out if given a chance.

If no perforation is found, the appendix is removed and the wound closed without drainage.

If perforated, drainage is inserted—by preference, one or more wicks made of rolled rubber strips cut from surgeon's old gloves.

Place the drains where the pus has accumulated, at the base of the cecum, or behind the cecum, or into the pelvis, as indicated.

If there be an abscess cavity, tubes are sometimes used. The chief objection to their presence is the danger of pressure necrosis, resulting especially in perforation of the gut or marked sloughing of the abdominal fascia.

In the presence of pus, the wound is left wide open unless there is a marked tendency towards intestinal prolapse, in which case a stitch or two of plain catgut through the peritoneum is sufficient. Why close the abdomen? If we have an abscess elsewhere in the body and open it, do we sew a part of it together again? Why drag infected material through muscle, fascia and skin with our suture material?

It has been found that without stitches the sloughing of the anterior abdominal wall is lessened and the danger of postoperative hernia is reduced more than half.

A pad is applied to the wound, kept moistened with hot boric acid solution, and a hot water bottle is applied over all. These dressings are changed as often as they become offensive. After pus has disappeared, the wound is drawn together by adhesive strips.

After operation, saline and glucose are given intravenously and the stomach washed out as indicated. The Fowler position with the patient lying on his right side, is assumed.

When the condition is complicated with a general peritonitis, a rather low jejunostomy has seemed preferable to one higher up. Before making this a statement of fact, further study is necessary.

TABLE 1.

Death rate from appendicitis and Typhlitis per 100,000 estimated population.

Area.	1920	1921	1922	1923	1924	1925	1926
The registration area in continental United States	13.4	14.4	14.2	14.8	14.9	15.1	15.0
Registration States[1]	13.2	14.2	14.0	14.6	14.6	14.9	14.7
Cities in registration States[1]	19.2	20.2	19.9	21.2	21.5	21.9	21.7
Rural part of registration States	7.5	8.4	8.5	8.5	8.4	8.7	8.5
Registration Cities in non-registration States	26.4	30.5	29.6	28.6	32.7	30.0	28.0
All registration cities[1]	19.4	20.5	20.2	21.4	21.8	22.2	21.9
Alabama[2]	.....	.....	.....	.....	.....	13.4	11.2
*Arizona[2]	.....	.....	.....	.....	.....	.....	13.3
California	13.0	15.6	17.2	16.9	19.3	16.0	15.9
Colorado	24.5	22.8	30.5	25.1	24.7	24.8	26.1
Connecticut	9.5	12.6	13.2	11.9	12.4	12.7	12.3
Delaware	9.4	6.2	10.1	11.3	7.7	8.0	10.8
Florida[2]	10.5	12.4	11.5	12.2	11.9	15.1	18.1
Georgia[2]	.....	.....	10.6	11.2	10.5	*	*
Idaho[2]	.....	.....	16.5	12.5	18.5	15.4	14.4
Illinois	15.6	16.4	15.6	17.2	16.3	17.4	17.2
Indiana	12.7	15.5	14.2	15.4	14.0	15.9	13.3
Iowa[2]	.....	.....	.....	14.9	16.5	15.7	15.9
Kansas[2]	15.6	15.7	17.8	17.1	17.2	17.4	17.3
Kentucky	8.2	10.6	11.0	12.8	11.2	12.4	11.4
Louisiana	13.0	16.1	13.0	14.3	16.2	18.9	15.3
Maine	17.7	17.0	15.9	18.1	15.9	16.9	15.3
Maryland	10.1	9.6	10.0	10.6	11.6	11.2	10.3
Massachusetts[3]	11.8	13.2	12.5	13.3	14.0	13.3	12.6
Michigan	16.0	16.3	13.9	15.9	15.8	16.8	16.5
Minnesota	17.7	18.7	16.7	17.3	17.1	16.6	15.3
Mississippi	12.7	14.0	12.3	13.9	12.8	15.9	15.1
Missouri	14.0	15.1	15.0	17.4	15.3	16.2	16.9
Montana	22.2	21.5	18.9	15.9	14.9	14.7	14.7
Nebraska	19.1	.....	18.1	20.0	18.2	19.7	19.5
New Hampshire	11.5	15.1	15.9	14.1	15.1	13.1	12.3
New Jersey	11.1	12.1	12.1	13.2	14.8	14.5	15.5
New York[3]	13.7	13.9	14.6	1.50	15.6	15.6	15.7
North Carolina	8.6	9.4	9.4	10.3	12.3	11.3	11.4
North Dakota[2],[3]	.....	.....	.....	.....	17.6	23.2	22.0
Ohio	13.0	14.0	13.8	13.9	14.3	13.4	14.3
Oregon	15.5	14.1	18.8	19.6	15.5	14.3	15.4
Pennsylvania	10.9	12.4	12.3	12.8	11.7	12.9	12.9
Rhode Island	12.2	12.4	15.2	11.2	18.4	12.5	14.3
South Carolina	8.2	7.0	7.7	7.7	8.0	8.1	8.5
Tennessee	14.1	13.9	13.8	15.6	14.9	13.9	14.1
Utah	24.0	22.3	28.6	18.9	25.0	22.4	24.1
Vermont	14.2	21.6	18.4	14.8	17.3	19.9	17.3
Virginia	8.4	9.8	9.6	10.8	9.9	10.5	10.2
Washington	14.6	14.6	17.3	15.6	14.5	13.9	16.1
West Virginia[2]	.....	.....	.....	.....	.....	12.1	11.6
Wisconsin	14.9	15.5	14.3	14.6	14.6	15.1	15.0
Wyoming	.....	.....	18.9	26.4	23.1	29.3	24.2

Figures do not appear on the Chart for the following States:
Arkansas, Nevada, Oklahoma, South Dakota, Texas, New Mexico.
1.—Including District of Columbia.
2.—Not added to registration area until a later date.
3.—Estimated population 1924 based on Federal census 1920 and State census 1925.
*State law declared unconstitutional.

The above description has been used in treating my last 125 acute appendix cases during the past twenty-three months.

Originality is not claimed. By a process of selection what seemed best has been used.

RESULTS

1. Acute appendicitis showing definite plastic exudate without macroscopic perforation: 69 cases, no deaths.
2. Appendices ruptured when first arriving at hospital: 36 cases, 1 death. The death was in a fulminating case which progressed rapidly to general peritonitis.
3. Localized appendiceal abscesses when first seen: 9 cases, 2 deaths. Both of the deaths occurred in young women who were suffering from influenza. Their abdominal symptoms were first ascribed to "intestinal influenza." The localized abscesses were drained under local anesthesia. Of the remainder, one case developed a subphrenic abscess; an-

other had to have secondary drainage through the vagina. Five of these cases had their appendices removed; four were not disturbed.

4. General peritonitis when first seen: 11 cases, 6 deaths. One of these cases lived forty-one days. She died of inanition.

SUMMARY

The principal points to be stressed are:

1. Educate physician and public **never** to give a cathartic in acute appendicitis.
2. Dehydration and hypochloremia must be overcome before operation, and treated, if necessary, after operation.
3. Gentleness at time of operation is of extreme importance.
4. In pus cases, drainage through a wide open wound gives best results.
5. Use drainage material which will not cause pressure necrosis.
6. General peritonitis is still an unsolved problem.

DISCUSSION

DR. K. D. LYNCH, El Paso: I had very extensive training in general surgery before I took up genito-urinary work and I would not want to see Dr. Senger's paper go undiscussed, as he certainly has summed up for us the logical things to do in our present knowledge of appendicitis. It is true, he did not discuss the various types of pathology we get in cases of appendicitis, but did not have time to do so.

Talking about operating on cases and removing the appendix, he said you can always remove the appendix if you want to go that far. I think it is a question with the individual surgeon whether he will go the whole distance or not, in some of the cases where they have been drained and where the patient has gone on and died. Yet, many of these cases, when autopsied, show that one of the reasons for the death was not the appendix, but because the surgeon did not go the whole distance and did not do a complete operation.

Drs. Werley, Waite and a number of others in El Paso, have what they call a Pathological Club, and they go after postmortems. They want to see exactly what the patient died of and it is very interesting, in those cases of appendicitis, to see what might have been the result if the surgeon had just gone a little further. There is no criticism implied on my part, of course, as to the surgeon's handling of these cases, but often, if he will autopsy these cases, he will find that, if he had gone just a little further, he might have been able to save that patient's life. I think if we all go after autopsies, we willl know better what to do in some of these individual cases.

DR. SENGER: I might tell Dr. Lynch that the man who never makes an error in diagnosis is the man who never performs an autopsy. We all make mistakes—we do not go far enough in surgery sometimes, and then, unfortunately, sometimes we go too far. The man who does not follow up his deaths with autopsies, however, is the one who never learns. Some of the things we meet at the autopsy table make the cold shivers run up our backs.

DR. E. T. HENSLEY, Portales, N. M.: A very great many of us who live in the small towns do not have a chance to follow up our deaths with autopsies. I had a case, about three months ago, of unruptured appendix and felt pretty sure it was a case of general peritonitis, with perhaps abscess of liver, but could not get a postmortem. You cannot get postmortems easily with country people.

I heartily endorse the paper of Dr. Senger and also Dr. Lynch's remarks. In regard to abdominal irrigations, we used to get lots of gunshot wounds in Oklahoma. In some of these cases, we used to use normal saline, sewed them up, and they got well. I believe that irrigating a belly where you already have your infection spread all throughout the abdomen, is harmless.

In those cases where we have to wait too long to operate, or where we know the patient is going to die anyway and there is no chance whatever to save him, I believe the surgeon should not operate, as he is only hurting the cause of surgery by so doing.

DR. SENGER (closing): I might have enlarged my paper and gone into the pathology, but did not think I would have the time.

When a man comes to you with a neglected case of perforated appendix, it is a very serious problem. In the first place, you do not want to operate too soon. Wait until you get your fluid balance up to where it belongs and the salt up to where it belongs, and likewise the blood up to where it belongs. You can look at the patient's tongue and see if it is clear and whether it is moist or not; give him 6,000 c.c. of salt solution, and if he is vomiting, he needs more. You can give it to him in the veins; all you have to do is to put a hypo needle in a vein—anybody can do it. It is a very simple matter. I remember Dr. Jackson of Kansas City speaking about these cases. He spoke about some cases going ten days before operating, just filling them up with fluids. If you fill them up full of fluid, you will get better results and they can stand the operation better. Fifteen years ago we were told always to take out the appendix and to be sure and get the appendix, but now it is entirely different.

ENDOCERVICITIS

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(Read before the New Mexico Medical Society, at its Forty-Seventh Annual Meeting, Taos, New Mexico, June 12-14, 1929.)

There is perhaps no more common infectious process calling for observation and treatment than that of the uterine endocervix, called endocervicitis. It is a problem confronting the medical specialist, the surgeon, as well as the gynecologist.

Endocervicitis is one of the most widespread and troublesome conditions. Various writers give the figures as, conservatively, seventy to eighty per cent of women who have borne children or aborted, and seven to twelve per cent of those who have not. The marital state seems to play some part as there are twelve and two tenths per cent of those married having no children against seven and seven tenths per cent of single women (Faulkerson). The age incidence is 33.5 years, proving it is most prevalent at the child-bearing age.

Endocervicitis, or cervicitis, has been known as an entity since the time of Hippocrates. In 1873, Leopold described to the medical world the myometrial lymph course, but this was long after Ambrose Pare and then, later, Oseander, in 1802, had already advocated and done cervical operations. Even then, no serious thought was given diseases of the cervix until the last thirty years. Arnold Sturmdorf, in his great text book, Gyneococoplastic Technology, in 1919, was really the one who forced to the attention of medical men the deleterious effect that endocervicitis and its results had on the well-being of women. Now it is sorely neglected by some, unless vitally and professionally interested in the diseases of women. How many realize the distress of the discharge, irritation and pain, the parametritis and other eventualities concomitant with the disease?

C. Jeff. Miller has aptly said, "Any disease which can end as endocervicitis can, in pathology of the upper pelvis, in spontaneous post operative and post partum infections, and which has the potentialities of a transition to malignancy, is indeed a disease to be taken seriously." Welch, in 31,000 cases of cancer collected from literature, found twenty and five-tenths per cent involving the uterus. Therefore, too much stress cannot be laid on eradicating the underlying etiologic factors.

ANATOMY AND PATHOLOGY

The cervix develops from the second portion of Mullers duct, originating independently from the uterine body per se. At the junction of the cervix and corpus uteri is the internal os, usually at the depth of one to one and one-half inches. The internal os acts as a sort of sphincter with circular muscle fibers and is more or less a barrier to the invading organisms of the uterus, except, perhaps, the gonococcus. It will be remembered, Winter, in 1888, first described that the uterine endometrium in the normal, is usually free of bacteria. The cervix, with the shape of the canal, the constricting external and internal os, and the ever present mucus plug, is presumably the protecting agent acting jointly with periodic drainage from menstruation.

On the other hand, the basic structure of the cervix peculiarly predisposes this part of the organ to infection. The mucous membrane of the cervix is in small folds radiating from a central line having a sluggish blood supply. It is composed of many deep, complicated racemose glands, with ducts emptying into the cervical canal. Their lining is epithelium of cylindric goblet cells secreting true mucus. Towards the external os, the ciliated epithelium undergoes transition into the laminated type, which covers the intravaginal portion of the cervix. From the internal os the cells become the corporal endometrium.

It must be remembered here, the primary factor causing the morbidity of any endocervical lesion is infection. Once these glands are infected, there is a tendency to hold the infection for a long period of time, even years.

The glands, become multiple crypts of focal infection, while giving local signs and symptoms, may likewise be the foci which are giving manifestations of a systemic disease. (Dickinson).

Equally important are the lymphatic structures of the uterine body and cervix. These channels may be traced from the cervical mucosa through minute ostia directly to the myometrium supplying each part of the corpus uteri and branching out into the parametrial tissue and broad ligaments.

Trauma and gonorrhea are the predisposing causes of infecting the endocervix. By trauma is meant parturition, pessaries, dilatation and currettage attempts at abortion, poor endocervical treatments and strong chemical douches.

Considering then, the ascending lymphangitis, endocervicitis is a difficult disease to cure by local applications because the infection rarely spreads by continuity of tissue, but rather by the lymph stream, and it is easy to see that, by eradicating the focus in the mucous membrane, little can be done to effect a cure.

When the infection is established from any one of the above causes, the disease furnishes the necessary irritation to continue the process. One of the manifestations of endocervicitis is erosion, eversion, ectropion, or whatever terminology is used. This erosion is a condition of overgrowth of the endometrium of the cervical canal, which nearly always displays a tendency to extend its normal limits on to the vaginal part of the cervix as well as ascending, and, as the columnar epithelium of the canal has none of the opacity of the dense stratified epithelium of the vagina, the affected area of the vaginal part of the cervix has the red, raw, eroded appearance.

MICROSCOPICAL

When the cervical endometrium is packed with round cells in the sub-epithelial tissue about the glands, they are stimulated to activity, proliferate and secrete more mucus. They then become distended and the surface covered with a single papillary layer of epithelium healing in projections, closes the

glandular ducts, causing nabothian follicles. These follicles are the round, shot-like bodies felt with the examining finger. The so-called erosion is then akin to abnormal cell formation and there is only a small line of demarcation between the extreme cell proliferation in orderly arrangement of hyper-plastic endocervicitis and the disorderly arrangement of embryonal cells found in a true malignancy of the cervix.

ETIOLOGY AND BACTERIOLOGY

Strachan says endocervicitis is essentially inflammatory and when first seen the inflammation is usually chronic, which brings up the fact that some of the first infections of the cervix may be traced back to infancy. It may be hematogenous from one of the acute exanthemata, or even infected with colon from improper care during an attack of diarrhea. Again, in the erosions of the nulliparous and virgins, it may be due to a fetal condition where the gland bearing columnar epithelium is not confined to the cervical canal, but extends on to the portio. Anemia, too, reduces the general health, lowering the acidity of the vagina, allowing the invasion of organisms. Doederlin believes, in the absence of syphilis, tuberculosis, and non-demonstrable bacteria, that, in a chronically inflamed cervix previously normal, the cause is gonorrheal. There may be an infection due to a passive congestion such as exists in intra or extra uterine tumors or to a sub-involution.

In chronic endocervicitis the bacteria encountered, not gonococcal in origin, include those bacteria usually found to follow cervical lacerations. The most common are, streptococci, staphylococci, colon bacillus and pseudodiptheritic bacilli. Usually the predominant ones are aerobic.

In the presence of inflammation of true chronic endocervicitis, there is an enormous variety of bacteria and the great difficulty is encountered in knowing which are and which are not, pathogenic. Laura Moench, of Rochester, has proven one thing: there is a strong affinity of the cervical streptococci for joint tissues in systemic infection.

Cullen, in his examination of seventy-five cases of cervical discharge, found fourteen different organisms possessing definite cultural characteristics.

SYMPTOMATOLOGY

The symptoms of endocervicitis range from leukorrheal discharge to the systemic effects of a focal infection. The great difficulty is that, when the patient reaches the surgeon, she is often complaining of associated or resulting pathological lesions which obscure the original lesion. The usual complaints asserted clinically, though, are anemia, leukorrhea, neuroses, pre-menstrual and co-menstrual pain, backache, dyspareunia, sterility, menorrhagia and metrorrhagia.

The signs on physical examination are equally as obvious. They are, discharge from the external os, mucous or purulent in type. Reddened or purplish lips of the cervix, lacerations, nabothian cysts, or mucous cysts. Granulating or erosion-like areas circumventing or partially surrounding the cervix. These are usually on the anterior or posterior lip. There is also found a posterior cellulitis of the uterosacral ligaments of greater or less degree.

DIAGNOSIS

Every case should be examined, where possible, with a speculum and good light. When this is done, even those cases showing little leukorrhea may reveal an extensive degree of erosion or even eversion. Every case, too, should have a bimanual glove examination and the possibility of syphilis and tuberculosis kept in mind.

Cancer of the cervix must be differentiated from cervicitis or endocervicitis and, although the change from the benign to the malignant is not understood, nevertheless, it may be there. It is a simple matter when in doubt, to obtain a curretting or a section for microscopic examination, with a tonsil punch and novocaine.

TREATMENT

Care must be used in treating an acute endocervicitis because of the danger in precipitating a pelvic inflammatory process, and the failure to treat an endocervicitis during pregnancy may lead to an unwelcome postpartum infection. If one fails to regard, in acute infections, Skene's glands, no matter what treatment may be used, it will be of no avail.

The treatments for endocervicitis are numerous, but any method will fail unless one considers the anatomy and underlying pathology which the anatomical structures make possible. There is scarcely any branch of surgery where there is such a dire lack of unanimity as the treatment of endocervicitis.

Local applications, such as silver nitrate, fifteen per cent, phenol zinc sulphate, argyrol, mercurochrome, iodine and tampons, help in some cases. But more often, when treatment is stopped, the disease is the same. In the treatment of acute infected cervices, it is found that, unless local treatment is begun within a few weeks, it is of little value.

It is difficult to understand how a topical drug, antiseptic, or germicide can penetrate several layers of tissue and leave any appre-

ciable effect on a lymphangitis or a parametritis.

Ionization, galvanism, and alcohol injections have met with indifferent results. Diathermy, to the general practitioner, means numerous treatments and inaccessibility to a machine. Radium, first used by Curtis in 1920, is difficult to control and often forms scars on the cervix and stenosis unless in expert hands. Vaccines have never been satisfactory.

Out of all the chaotic methods of treatment, Sturmdorf has shown logically and conclusively that there is a cure for endocervicitis. One is his operation and the other Hunner's, cauterization. Sturmdorf's operation was and is a great advent in curing endocervicitis as it removes in a cone the etiological cause, the infected mucosa, without injuring the musculature of the cervix. The operation is accomplished by making a circular incision around the external os outside the eroded area. The mucous membrane cuff is then freed from the cervix and the cylindrical flap separated as far as the internal os. The entire mucous membrane is coned out with a scissors or scalpel as far as the internal os, which leaves undisturbed the underlying musculature. The vaginal cuff is then inverted over the raw edges and sewed in place with any suture of choice.

The end results of the operation are superior to amputation and to trachelorraphy, as proved by the figures of the Long Island Hospital compared with those of Howard Kelly's Clinic in Baltimore. In the Long Island Hospital, of 300 cases, sixty-four per cent were cured, twenty-eight per cent improved, eight per cent unimproved. In Kelley's Clinic, sixty-two per cent were cured, thirty per cent improved, seven and one-half per cent unimproved.

There can be no question that the Sturmdorf operation, where operation is in question, is the one of choice. This is true in severe cervical infections and chronic septic types. It removes the focus of infection, leaving the musculature as a protection to the uterus. It does not cause stricture or stenosis. It is comparatively free from loss of blood. It permits post-operative parturition and is often the cure of sterility. Where other surgery is done and in severe cases, it is ideal. But it requires an anesthetic and hospitalization.

Cauterization is done in two ways:

If the pationt has an endocervicitis and some abdominal fault to be corrected, such as a fibroid or ovarian cyst, there is no contraindication to taking an anesthetic and cauterizing at the same time, with the exception that the better technic is not to do vaginal work when the cauterization is done. Theoretically, there is a possibility, if a cystocele or repair of the pelvic floor were done and one had a post-cauterization bleeding, it would be difficult to stop. Further, one does not like to have an infectious discharge pouring over a fresh repair.

The usual technic is as follows: The patient is prepared vaginally and the position of the uterus determined as a matter of drainage. The vagina is scrubbed with gauze and green soap. The vagina and cervix are then painted with some one of the non-inflammable antiseptics. The anterior lip of the cervix is grasped with a single tenaculum and drawn into the speculum and the cervix dilated. A Percy water-cooled speculum is inserted for safety. With an electric cautery at cherry-red, the mucous membrane is cauterized in striae one-half to 1 cm. apart, beginning at the internal os and making the striations in line of the canal. It must be remembered the mucous membrane is from 2 mm. to 5 mm. thick, as a rule, and that too severe cauterization at the external os will cause stenosis. The strips of mucosa left between the striations grow over the cauterized area in six to eight weeks and these strips, strange to say, lose their infection. (Kendig Va. Med. Asso. Dec. 14, 1926). The eversions of the mucous membrane are likewise burned, touching each nabothian follicle. A piece of sterile gauze is usually left against the cervix as a prophylactic hemostatic measure.

In the office treatment, if the patient has a non-sensitive cervix, is partially dilated, not hysterical, and does not possess a conical cervix, then the probability is the operation will be a success.

The patient is put in a lithotomy position, and the vagina and cervix cleansed with a non-inflammable antiseptic. If dilatation is needed, the Peasley dilators are used to enlarge the canal sufficiently. The plug of mucus is removed from the cervix with essence of caroid or an alkaline solution on an applicator and hexylresorcinol inserted into the canal. In a too sensitive cervix, a pledget of ten per cent cocaine or four per cent butyn may be left in the canal for four or five minutes. The cervix is grasped with a volsella and the small nasal cautery inserted. It is controlled by a hand button and when the patient complains of pain it should be released. The pain is due to the muscular contraction of the internal os, or perhaps to the steam generated inside the very sensitive uterus. A number of striae are then made,

beginning at the internal os and drawing the tip of the cautery towards the operator.

This office cauterization may be done in stages, allowing two to three weeks to elapse between treatments. In some cases it can all be done at one sitting.

The patient is warned to expect some slight bleeding, either immediately or when the slough separates. She is instructed, too, to wear a pad for a few days, because the discharge is increased almost immediately. After about seven days, if the whole endocervix has been cauterized at one time, it has a dark gray necrotic appearance and quite some odor. The necrotic material disappears, usually, after two weeks and, as a rule, after the sixth week the discharge ceases. If the odor is too offensive and as a precaution, each day the cervix is painted with four per cent mercurochrome and after the sixth day douches of one-half ounce of soda to two quarts of water may be given daily.

One may expect the case to be entirely well after three months. Cauterization has its dangers, it is true. The spreading of a virulent infection, stenosis of the external os, and, in rare instances, infection; but it is perhaps the safest, best and surest non-operative means of a cure of endocervicitis.

SUMMARY

Endocervicitis is an infective process of the cervix usually brought on by trauma or gonorrhea. The pathology must be known to obtain a cure.

It is one of the most potent causes of more serious pelvic infection and of malignancy.

If untreated, it may be the cause of a focal infection.

It can be cured by the Sturmdorf operation and by Hunner cauterization.

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DISCUSSION

DR. K. D. LYNCH, El Paso, Texas: I certainly should not like to see Dr. McCrossin's fine paper go undiscussed. He has covered all the points so thoroughly, however, that it is difficult to add anything. We have been employing the procedure described by the Doctor for a long time and it certainly brings about cures in a great number of cases. I think it is really distressing to see a great many women come in who have been treated for long periods with various applications, for, as Dr. McCrossin said, you cannot get the information to any extent by such treatment; and when the treatment is stopped, the disease is often the same as before. In the office, we have found it an advantage to make a little novocaine injection with a needle at the point where the cervix is grasped by the volsella, and this helps to stop the pain a great deal. Then we also have put in a uterine sound in the cervix itself and get that pretty well anesthetized with cocaine on a swab before we go ahead with the dilatation. Another little instrument that helps and is very satisfactory in these cases is the Post cautery with a long silver tip to it. I think the dilatation preceding cauterization is essential in most of these cases, but there are some cases in which you can insert the Post cautery in the cervix without dilating. Another thing, with the Post cautery, we have not had any hemorrhages. We have seen cases, however, in which the ordinary cautery knife was used in a rather slipshod way—just plunged in, and the cervical canal sometimes cut very deeply. Cauterization like that will make a pretty deep sloughing of tissue, and I have seen some very severe secondary hemorrhages from it. I certainly think a note of warning should be sounded against that procedure.

TUMORS IN THE CHEST

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(Read before the Medical and Surgical Association of the Southwest at the fifteenth annual meeting, at Phoenix, Ariz., Nov. 7 to 9, 1929).

The study of intrathoracic tumors is of importance because of the frequency of errors in diagnosis, and the consequent disastrous results to the patients because of improper treatment. Not infrequently patients are encountered who have been sent to the southwest with a diagnosis of asthma or tuberculosis when the symptoms which prompted such a diagnosis were the result of a tumor somewhere in the chest.

The tumors which arise in the thoracic cavity may be divided, with respect to their most frequent origin, into mediastinal and true pulmonary or pleural, the latter including those also arising from the inner wall of the bronchial tubes. The usual classification applied to tumors elsewhere in the body—viz., benign and malignant—applies as well to chest tumors.

Mediastinal tumors are usually seen and a diagnosis made earlier than tumors elsewhere in the chest because they give rise to serious symptoms at an earlier period in their growth. The dyspnea and cough, which are such early and characteristic symptoms of tumor of the mediastinum, are apt to bring the patient quickly to his physician. The x-ray examination reveals that the shadows cast by mediastinal tumors are usually homogenous and dense. They stand out sharply against the surrounding lung and only rarely show evidence of infiltration of the latter. These shadows are nearly always bilateral, especially when they are well grown, and this, in most cases, will

serve to distinguish them from primary tumors of the lung.

Pleural tumors exhibit a varied symptomatology in which the pathognomonic signs of tumors found elsewhere in the body may be lacking. Thus, their remarkably long duration, extending at times over years, and their clinically benign behavior, are at variance with their truly malignant character. Clinically, the absence of cough and other pulmonary symptoms for a long time, aids in distinguishing pleural tumors from those developing in the lung. Pleural effusions are more frequently encountered in pleural tumors than in those in the lung. On the x-ray film the neoplastic thickening of the pleura results in a dense, more or less homogenious shadow which occupies the axillary zone of the chest and radiates toward the hilus, in contrast to the pulmonary tumor, which usually originates in the hilus region and radiates toward the periphery of the lung.

True pulmonary tumors may be classified, for our purpose, into primary and metastatic. Primary lung tumors may also be classified into benign and malignant.

Benign tumors in the lung are extremely rare. They rarely produce symptoms, and grow very slowly. In fact, the diagnostic distinction of a tumor of this type is that Roentgen examinations over a period of time show that it scarcely increases in size at all compared to the usual steady growth of the malignant types.

Of the primary malignant tumors in the lung, far the greater number are carcinomata. Roughly, two forms of these are recognized: one beginning at the root of the lung and progressively involving more of its parenchyma, and a second which has a lobar distribution. The former is the adeno-carcinoma which originates as an endobronchial tumor in one of the primary bronchi and spreads by extension through the wall of the bronchus to the adjacent lung. It is probable that dissemination along the peribronchial lymphatics also accounts for a considerable growth of the tumor. Lobar carcinoma, on the other hand, arises extrabronchially, probably from alveolar epithelium anywhere in the lung; it is a tumor of flat cells which are often of indeterminate type.

Primary sarcoma of the lung is found very infrequently. In fact, it is so uncommon that only some unusual feature of the case warrants its diagnosis. It is not unlikely that some of the cases of primary sarcoma which have been reported were in reality tumors which originated in the mediastinum and secondarily involved the lung. The early incidence of sarcomata, the majority of which are found before the age of 40, may have some value in distinguishing them from epithelial tumors.

Primary tumors in various organs so frequently occasion metastastes in the lungs that the Roentgen examination of the latter is endowed with an unusual importance in that the clinician is thereby enabled not only to discover metastases which elude his physical examination, but he is also afforded decisive, though indirect, evidence as to the nature of disease elsewhere in the body.

In respect to their pathology, we have to do, practically, with three kind s of metastatic tumors: namely, carcinoma, sarcoma, and hypernephroma. Metastatic sarcoma of the lung is, in a large proportion of cases, secondary to tumors of the bones; whereas, metastatic carcinomata result most frequently from primary tumors in the gastro-intestinal tract or in the breast.

For this classification and description of chest tumors I am indebted to the excellent volume by Drs. Wessler and Jaches of New York.

The diagnosis of intrathoracic tumors is not infrequently a matter of considerable difficulty. The two conditions in which the most difficulty in differential diagnosis is encountered, are tuberculosis and asthma, and it is sometimes impossible to make a positive diagnosis until the case comes to autopsy.

An afternoon rise in temperature to 99.2 to 100, a gradual loss in weight and strength, a frank hemoptysis or blood-streaked sputum, are frequently found in malignant tumor of the lung as well as in pulmonary tuberculosis, especially in young adults. Cough, with or without expectoration, dyspnea and chest pain, are also rather common symptoms in chest tumors.

The following suggestions may be found helpful in making a diagnosis:

1. The personal history, especially as to previous operations, particularly amputations of limbs, breast amputations, operations on the gastrointestinal tract, and on the genito-urinary system, or for the removal of new growths from any part of the body, is of importance because of the frequency of metastasis in the lungs.

2. Symptoms: While in many cases the symptoms caused by the presence of chest tumors simulate very closely those of tuberculosis and asthma, namely, dyspnea and cough and sometimes the extensive bronchial rales and squeaks which are heard in the latter disease, the symptoms in asthma are likely to be more spasmodic. Frequently the asthmatic is, for a time, entirely free of

symptoms, whereas the symptoms produced by tumors, which are largely due to pressure, are persistent and usually gradually increase in severity. The pain in tumors is usually more persistent and usually increases as the tumor grows; whereas, in tuberculosis, the chest pain, which is usually due to pleurisy, is apt to be remittent. The cough resulting from tumors is more of the brassy and croupous and unproductive type, in contrast to that in tuberculosis. The hemorrhage in tumors is more often small, rather on the order of blood-streaked sputum, except in the advanced stage when degeneration and caseation have resulted, and the blood in tumors is likely to be dark in color, whereas hemorrhages in tuberculosis are frequently frank from the outset and the blood is usually light in color. The dyspnea in tumors is usually much more marked in proportion to other symptoms pointing to disease in the chest, than it is in tuberculosis or asthma. Weakness is often noted early in tumors of the lung and appears to be out of proportion to other symptoms and physical signs; whereas, in tuberculosis, it comes on rather insidiously and is not marked until late in the disease. Cachexia and anemia also seem to appear earlier in chest tumors than in tuberculosis.

3. Physical signs: The physical signs in malignant tumors are, as a rule, very indefinite as compared with the extent of the disease. They vary, of course, according to the size and location of the growth, and the amount of involvement of the air passages, with the accompanying secondary changes. Inspection often shows impairment of motion on one side of the chest, more marked than it would be in tuberculosis, and, in many cases, distention of the superficial veins on the side in which the tumor is located, or on both sides, where it is in the mediastinum, and sometimes edema of the neck and face are seen. Marked enlargement of the supraclavicular and axillary lymph glands, especially if the enlargement has been rapid, should suggest tumors rather than tuberculosis. The percussion note may vary from normal over small tumors, to flatness over airless lung, or dulness or flatness over those that have extended to the chest wall. If the tumor is central, whatever change there is in the percussion not will be due to change in the air content of the overlying lung. Sometimes the variation in the note from that obtained over the surrounding uninvolved region is not enough to be detectable. Auscultation may find the breath sounds to be greatly diminished or absent. A partial occlusion of a bronchus by a tumor may give rise to a peculiar amphoric breath sound called cornage, which sign is very suggestive of bronchial carcinoma. Absence of breath sounds, especially if accompanied with flatness on percussion, may be due to pleural effusion. Hemorrhegic effusion should at once suggest the possibility of malignancy. Such effusion may also contain cancer cells.

4. Roentgenograms of the chest are of great value, and, in fact, are almost indispensable in the diagnosis of intrathoracic tumors. No examination for diagnostic purposes can be considered complete without stereoroentgenograms of the chest, and in obscure cases, where antero-posterior plates do not clear the diagnosis, lateral skiagrams should be made.

In arriving at a diagnosis, use should be made of the history, the symptoms, and the physical signs, together with the carefully made fluoroscopic and x-ray study.

The early diagnosis of tumors in the chest may be greatly facilitated if surgeons will advise periodic Roentgen examinations of the chest where they have removed new growths from any part of the body, but especially the breast and gastro-intestinal tract.

CASE REPORTS

Case No. 1: Mrs. M., age 55, family histroy irrelevant.

Personal History: Had scarlet fever at age of 22. Had pneumonia 20 years ago. Had severe attack of tonsilitis several years ago. About ten years ago had a small tumor removed from shoulder. The operating surgeon reports it a lipoma. Since then has enjoyed good health until about three months ago, when she developed a cough. Was examined in a clinic and told her heart was four inches out of line. Later, another physician made a diagnosis of tuberculosis of the lungs, and laboratory reported positive sputum. Referred to us, April, 1929.

Chief Complaint: Cough with slight expectoration, moderate dyspnea and slight afternoon fever.

Physical Examination: Patient's general appearance was good, except that the appearance of the skin was not good—slight cachexia.

Chest Examination: showed marked dulness on percussion, lower two-thirds of left lung, with no air entering the lung below the 4th rib. There was hyperresonance at the extreme apex. In the right lung a few moist rales were heard at the apex.

X-ray films showed a dense shadow filling the whole of the left side from the 3rd rib to the base.

Several sputum tests were made, but all were negative for tubercle bacilli.

Patient had several slight atacks of coma, preceded by headache, lasting usually but a few hours, but on June 21st went into a coma, accompanied by convulsions, and died on June 22nd, 1929.

At autopsy, a large growth, occupying almost all of the left side of the chest was found, with the left lung compressed upward almost to the apex. There were some adhesions from the growth to the chest wall, and it was attached by a definite pedicle to the diaphragm, from which it derived

its blood supply. Microscopic examination showed the tumor to be a spindle-cell sarcoma.

The cause of death was given as malignant tumor of the chest, with probable metastasis to the brain.

Permission was not given by the family to open the skull.

Case No. 2: Mrs. B., age 47, family history irrelevant.

Personal History: Had typhoid fever ten years ago. Pleurisy with effusion three years ago. Aspiration showed fluid serous. Has not felt well since. Six years ago had bilateral salpingectomy, and oophorectomy was done, but no pathological report could be obtained describing the pelvic condition.

Chief Complaint: For more than a year she has suffered with dyspnea and cough, both gradually increasing until, for several weeks, she had been unable to sleep or eat with comfort.

She was referred to us for diagnosis on July 12th, 1929. Had been previously told she had tuberculosis.

Upon arrival, she was so weak she could not allow a very careful examination, but atelectasis of the left lung was evident. She was very anemic and had an afternoon rise of temperature to 99-2/5.

X-ray films were made with some difficulty, but they showed the mediastinum with all of its contents, together with the heart, drawn quite well to the left side. and the lung collapsed.

Attempted bronchoscopic examination produced marked cyanosis, and during x-ray examination she suffered attack of syncope.

Patient died on July 21st.

Autopsy showed an occlusion of the left bronchus by carcinomatous growth beginning in the main bronchus. The mediastinal glands and those in the upper abdomen, were greatly enlarged, some as large as a hen's egg.

The pathologist reported the growth to be primary carcinoma arising from the bronchial mucosa, and, secondarily, involving the mediastinal and upper abdominal lymph glands.

EVAPORATED MILK IN INFANT FEEDING

C. F. MILLIGAN, M.D.,
Clayton, N. M.

(Read before the Pecos Valley Medical Association, at their annual meeting, held at Roswell, N.M., Oct. 12, 1929).

When one surveys the subject of infant feeding, he can not help but be amazed at the time and energy that has been spent on the subject, and yet, it is probably less understood by the general practitioner than any subject that he has to consider.

Formerly, he was expected to memorize a lot of formulas on cream mixtures, top-milk mixtures, skim-milk mixtures and so forth, until he became so confused that he gave up in despair, and decided that the best thing for him to do would be to keep a few sample cans of prepared baby food and pass them out, with the accompanying directions, whenever the occasion demanded.

Now, it is not my intention to belittle the prepared baby foods. Some of the newer preparations are excellent foods, based on scientific principles, and have been life savers to countless infants, but they are not "cure-alls" and he who uses them as such will, sooner or later get into trouble, and, besides he is doing his part in driving the public to obtain their baby foods and feeding directions from druggists and grocers, who are quick to recognize the commercial value of such an enterprise. These preparations are expensive and it is difficult to obtain them in the smaller towns.

The subject of infant feeding has been revolutionized within the past few years. It has become more scientific but less complicated. We use fewer and simpler formulas, based upon rational requirements.

There are four things to be considered in the selection of an infant food:

1. It must contain the caloric value;
2. It must be properly balanced as to protein, carbohydrates, mineral salts and vitamines;
3. It must be free from harmful bacteria;
4. It must be digestible.

The first requirement, "caloric values," treats of the amount of food necessary to sustain life and to promote the natural growth and development of the child. Scientific investigation has discovered that the average well baby needs, for the first year of life, about fifty calories per pound of body weight, for each twenty-four hour period. Take, for example, a normal child weighing ten pounds. This child should have a total food value, for a twenty-four period, equal to ten times fifty, or 500 calories. We know that every ounce of cow's milk contains approximately twenty calories, and every ounce of sugar contains approximately 120 calories, so, with this knowledge, we are able to make a formula that will meet the caloric needs of any child.

The second requirement is that the food must be properly balanced. It must contain a sufficient amount of protein, carbohydrate, mineral salts and vitamines, A, B, C and D.

The protein may be supplied from cow's milk, and the formula will contain sufficient protein if we include in this at least one and one-half ounces of milk for each pound of body weight for the twenty-four hours. Let us take our former example of the ten-pound baby. Ten one and one-half ounces would equal fifteen ounces of milk. Since this is a minimum requirement, I usually add about three more ounces of milk to make up for waste or what the baby may not take.

It is now necessary to add some carbohydrate in the form of sugar. We shall again figure for the ten-pound baby. Under our first requirement, or caloric needs, we found

that the baby needed 500 calories. Now we have added our eighteen ounces of milk, which gives us 360 calories; then, we will need, in carbohydrate, the difference between 500 and 360, which is 140 calories. Figuring on a basis of 120 calories to the ounce, we have one and one-tenth ounces of sugar. Making the same allowances that we did in figuring the milk, it would be safer to add one and one-half ounces of sugar to our formula. This brings up our caloric value to 540, which is forty calories in excess of the minimum requirement.

If we put this baby on a four-hour schedule, he will have five feedings. We have about eighteen ounces of milk and sugar to divide into five feedings, which will give us a little over three ounces at each feeding. This will probably not be enough fluid for the average ten-pound baby, so we should add to the formula about four ounces of water. This will give the baby about four ounces of fluid at each feeding. If he requires more fluid than this, add more water. If he fails to gain sufficient weight, then reduce your water and add a little more milk and sugar.

This formula will contain a sufficient amount of mineral salts to supply the baby for the first six months of life. After that time, his needs are greater and this demand should be supplied through green vegetable soups. I treat my breast-fed babies in the same way.

The vitamines are an essential element in the baby's diet. A and D are the fat-soluble vitamins and B and C are the water soluble vitamins. The formula under consideration, like breast milk, will contain sufficient vitamines A and B but not enough of vitamines C and D. The lack of vitamine C will produce scurvy and a deficiency in vitamine D will produce rickets. The deficiency in vitamine C may be overcome by feeding the baby one or two tablespoonfuls of orange or tomato juice daily, and of vitamine D by one or two teaspoonfuls of cod liver oil two or three times daily.

In this section of the country, where we have so much sun light and our babies are out in the fresh air and exposed to the indirect rays of the sun, we do not feel the need of cod liver oil nearly so much as they do in climates where there is more damp, cloudy weather, and especially is this true of some of our larger cities, where sunlight and fresh air are at a premium.

Now we come to No. 3—a very important item in the selection of a baby food. "It must be free from harmful bacteria."

Those of you who are familiar with the manner in which milk is handled on most of our farms and ranches, know that it is not a fit food for adults and much less for infants. In many places, the cows lie down in filthy corrals and stables, contaminating their udders with manure. The udders are not washed before milking, neither does the milker wash his hands. In some places, the cow is milked while the calf sucks, and, where this is practiced, it is impossible to keep the calf slobbers, with a generous proportion of flies and manure, from dropping into the milk bucket. Now we can not make such milk clean, but we can make it fairly safe for infant consumption by boiling it. Boiling the milk brings about some changes, which we shall consider later.

The fourth and last consideration in the selection of a food, is that it must be digestible for the baby. The normal baby is quite active and grows and develops quite rapidly. To meet these needs it is necessary that the digestive system work pretty nearly to the full capacity. This can be accomplished by feeding only such foods as are easily and quickly digested. In taking the histories of my babies, one of the first questions that I ask the mother is, "What do you feed the baby?" If the baby is over three or four months old, the usual answer is, "We give it a little of everything that we have to eat."

For the past year, I have fed my babies on unsweetened condensed milk. I began this after reading the reports of the Saint Louis Childrens' Hospital. I shall quote the opening paragraph of one of their recent reports:

"For a number of years past, unsweetened evaporated milk has been used in this clinic for the preparation of infant feeding formulas and good results have been obtained. Originally, this form of milk was used chiefly for the feeding of patients who were returning to homes in districts where the milk supply was of questionable purity, or in the case of patients who were traveling or going to summer resorts. Later, the use of evaporated milk was extended to the poorer and more ignorant dispensary class of patients where it was felt that the mothers were not sufficiently intelligent to be trusted to sterilize formulas properly or did not have the facilities for the refrigeration of bottled milk. The results, even under adverse conditions, were so generally satisfactory that we have been led to make a much more extensive use of evaporated milk for the preparation of formulas for both well and sick infants of all classes."

"In the light of our experience it is difficult to understand why evaporated milk

has not been more extensively used in infant feeding. It would appear that an uncritical prejudice has been the chief factor in the limitation of its use."

Unsweetened evaporated milk is a non-proprietary distribution form of whole cow's milk of standardized and legally controlled composition. It differs from ordinary bottled milk in that it is sterilized instead of pasteurized, is marketed in sealed cans instead of bottles and is concentrated by removal of approximately sixty per cent of the water, by evaporation in a partial vacuum. The product is also homogenized, which breaks up the fat globules into smaller particles.

As evaporated milk has an interstate distribution, it is subject to Federal inspection and regulation under the Food and Drug Act.

The constancy of composition thus insured is an advantage from the standpoint of the construction of infant feeding formulas. Furthermore, cream does not separate from evaporated milk, as it does from fresh milk, so that all portions of the milk from the container have the same fat element.

Evaporated milk is sterilized by autoclaving at a temperature of from 200 to 240 degrees F. This makes it a safe food from the standpoint of bacterial contamination. The heating of the milk brings about certain changes in the physico-chemical properties. The casein is altered by heating so that, when it is treated by rennin or lactic acid, a much finer curd is formed than is possible with raw, pasteurized, or quickly boiled milk. A large tough curd can not form in the stomach from the use of evaporated milk. The change in the casein is due in part to the heating and in part to the process of homogenization, or a breaking up of the fat globules, to which the evaporated milk is subjected. There are good reasons for supposing that a fine curd is desirable in infant feeding.

Evaporated milk has, when diluted with equal parts of water, a caloric value equal to that of fresh milk.

The protein and carbohydrate elements of the milk are unchanged during the process of evaporation. There is, however, a slight precipitation of calcium phosphate as a result of heating; but, as cow's milk contains about three times as much calcium phosphate as breast milk, it is of no consequence if a small amount is precipitated.

The fat soluble vitamines A and D are fairly stable to heat and do not deteriorate on standing, so that we should expect the same proportions in evaporated milk that we find in fresh milk.

Vitamine B is now recognized as being composed of two elements: the first, or antineuritic, and the second, or growth-producing, element. The antineuritic element is unstable when subjected to heat, especially if it is in an alkaline solution, but is not destroyed when heated to high temperatures if in a slightly acid medium, and, since milk is slightly acid in its reaction, we should expect it to be unimpaired in evaporated milk. Cow's milk contains about four times as much of this antineuritic factor as breast milk, so that we may rest assured that any slight change in chemical reaction will be compensated in the excess amount. The second, or growth-producing element, is remarkably stable to heat and there is no evidence that this factor is decreased in evaporated milk as compared with natural cow's milk.

Vitamine C is, perhaps, the most unstable vitamine that we find in milk, and, when the milk is heated, a considerable amount of this vitamine is lost. The amount of this anti-scorbutic vitamine is variable in fresh cow's milk and is not to be depended upon to protect against scurvy. It may be assumed, therefore, that evaporated milk contains only a small amount of the vitamine C and, when used as a basis for infant feeding, it should be supplemented with orange or tomato juice.

The safety of evaporated milk from a bacteriological standpoint is, I believe, beyond question, and is a factor that makes it a very practical food and one that should very soon become quite popular with both the profession and the laity.

I believe evaporated milk to be more easily digested than fresh cow's milk because the tough curds are broken down and the fat globules have been separated by the heat treatment so that they are more easily subjected to the action of the gastric juices.

Evaporated milk is a non-proprietary product. It is inexpensive. It has a wide distribution, and is more convenient than fresh cow's milk in the construction of feeding formulas.

In conclusion, I should like to emphasize the fact that evaporated milk meets all four of our food requirements:

1. It contains the same caloric value as its equivalent in fresh cow's milk.
2. It is a properly balanced food containing the necessary protein, carbohydrate, when combined with sugar, mineral salts and vitamines with the exception of vitamine C, which is variable in fresh milk, and which may be supplied by the feeding of orange and tomato juice.
3. It is free from harmful bacteria.
4. It is digestible.

CHRONIC ENDOCERVICITIS

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(Read before the Pecos Valley Medical Association, at their annual meeting, held at Roswell, N.M. Oct. 12, 1929).

Chronic endocervicitis may be defined as a chronic inflammation of the cervical mucosa and the adjacent tissue.

ETIOLOGY

Chronic endocervicitis follows acute endocervicitis, although the symptoms at the time may be so slight as to escape notice. As to cause, chronic endocervicitis may be divided into two classes: Gonorrheal and septic.

The first type is more often seen in women who have had no children, although it is also seen in multiparous women. Second type is seen more often in the multiparous women and is the result of trauma produced during labor, in the majority of cases. This trauma is more rarely produced by: (1) excessive coitus; (2) foreign bodies; as tumors, polypi, pessaries, etc.; (3) unclean fingers or instruments; (4) strong chemicals. Owing to the constant presence in the vicinity of the cervix of pathogenic bacteria, infection takes place easily, following trauma.

PATHOLOGY

The infecting organisms penetrate the mucosa, affecting the glandular and interglandular tissue, causing round cell and lymphocytic infiltration. There is increased secretion on the part of the cervical glands, this secretion is irritating and sometimes causes erosion. After a variable length of time, the cervix becomes enlarged, chronically congested and everted. If laceration and eversion were previously present, these are increased. The mucous membrane may become thickened irregularly from papillary growths. If the external os is too small to admit free drainage, the secretions may become locked up within the cervix, producing ulceration in the vicinity of the internal os. The gland ducts may become obstructed, causing the glands to become retention cysts which may be felt as hard nodules on the cervix. These cysts may be so numerous as to produce a condition known as cystic degeneration of the cervix. They may contain pus and will appear as yellow spots on the cervix. One, or a group, of these cysts may project into the cervical canal, become pedunculate and form polypi. If cervical inflammation is long continued, the connective tissue proliferation and later contraction may cause the other tissue elements to disappear and the cervix passes into a condition of cirrhosis. The long continued irritation of chronic endocervicitis is undoubtedly a factor in the production of cancer.

Infection in the cervix may, at any time, ascend to the endometrium, or may extend downward and involve the structures of the lower genital tract. The infective organisms may be carried from this focus to distant organs, as the heart, kidneys, or joints, and these set up active inflammation.

SYMPTOMS

The most prominent symptom is a persistent copious leukorrhea. Associated with this may be backache, headache, dragging pains in the pelvis, and nervousness ranging all the way up to hysteria.

These symptoms may be due to concomitant pelvic disease, as chronic endocervicitis is not usually found alone. Occasionally, however, no other pelvic pathology is found and it is then said that the symptoms are due to reflex disturbances excited by the infected cervix.

DIAGNOSIS

The diagnosis is made by the history and by inspection of the cervix. There may be some doubt in cases accompanied by much surrounding induration and bleeding on manipulation. In these cases, a section should be removed and sent to a competent pathologist for microscopic examination, to exclude the possibility of malignancy.

TREATMENT

Treatment of endocervicitis may be divided into medical and surgical.

Medical treatment includes all except the actual cautery and the excision and repair of extensive laceration. The latter, which produces so much disability for so long a time, is used only in cases of extensive laceration and resultant scar tissue formation. I am using the actual cautery, which requires an anesthetic and some days in bed, on only those cases which are resistant to all medical treatment.

Many drugs have been used in the treatment of endocervicitis; the silver preparations, mercurochrome, acriflavine and phenol being probably the most important ones. The chief difficulty in the use of these drugs has been in reaching the seat of infection in the cervical glands. To overcome this, I have recently adopted the injection method advocated by Helvestine and Farmer, using an aqueous solution of mercurochrome which is less irritating than any of the other antiseptic agents used in the treatment of endocervicitis.

TECHNIC

The cervix is brought into view with a bivalve speculum, seized with a tenaculum for-

ceps, to steady it, and the vagina and cervical canal are swabbed free of discharge. For the injection, a metal or glass syringe with an extension, as in throat work, is best. Five-eighths inch, twenty-five gage needle is used. In their series of cases, Helvestine and Farmer used a two per cent aqueous solution of mercurochrome, but in my cases a four per-cent solution was found to produce no untoward results and, as the germicidal power is much greater, it has been used. The needle of the syringe is inserted at the junction of the mucosa and stroma, the point being kept toward the mucosa, as no pain is felt unless the needle enters the stroma. Injections into the cervix are made at the four points of the compass, the needle being passed into the mucosa up to the hilt and a few drops injected, then the needle is slowly withdrawn with a few drops injected along its entire course, until one-half a cubic centimeter is injected at each of the four points, a total of two cubic centimeters at each treatment.

Helvestine and Farmer used only one-half to three-fourths cubic centimeter at each treatment, but, by using the larger quantity I feel that the certainty of the mercurochrome penetrating to all points between the injections is much greater. These injections are made at weekly intervals, subsequent injections being made between the points formerly injected.

In conjunction with this, all cysts are punctured and allowed to drain; the cervical canal is kept widely open so as to facilitate free drainage. A routine douche of some mild antiseptic, as one to six thousand potassium permanganate, is prescribed, either daily or bi-daily, depending on the amount of discharge.

In cases of erosion, I also cauterize the eroded area with twenty per cent silver nitrate, at the weekly treatment.

The general hygienic condition of the patient is improved as much as possible and tonics are prescribed when indicated. This method of treatment causes little or no pain at the time of injection and only a transient sense of fulness in the pelvis afterward, which passes off in three or four hours. In none of the cases reported has abscess formation, necrosis or any other untoward result, followed this method of treatment.

Helvestine and Farmer[3] treated, by this method, a total of thirty cases, all of which were markedly improved. Four of this series were of gonococcal origin and required the longest number of treatments, or eighteen. Another series of six cases of nonspecific origin, which showed no laceration, required the least number of treatments, or six.

I have treated only six cases by this method. The oldest two cases have had six treatments each and are both about ready to be discharged as cured. In none of these six cases was the gonococcus found, though smears were made and a search instituted in each case. Rapid improvement had been noted in all of the cases after as much as two treatments, the erosion, the eversion and leukorrhea disappearing rapidly. Even in cases complicated by pelvic disease, the symptoms referable to the pelvis have been decreased after the cervical treatment. The headache has been greatly improved in every instance.

I have treated by this method no case of endocervicitis where extensive laceration was present, as I believe the treatment of choice to be surgery in these cases. However, Helvestine and Farmer have treated some of these cases, which have refused operation, and report marked improvement in all of them.

CONCLUSIONS

1. Endocervicitis is a frequent lesion, especially in women who have had children, and is frequently overlooked and neglected.

2. The injection method is preferable to the simple topical applications, because it reaches the seat of infection, whereas simple application of the drug to the canal does not.

3. The injection method is preferable to the actual cautery or surgery where laceration is not extensive, because it is simple of execution and does not produce the long period of disability and pain of the cautery or of excision and repair.

4. Results are quickly obtained by this method and these results are reflected in a great improvement of the patients' general health as well as in amelioration of the local symptoms associated with this disease.

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2. DUDLEY. Principles and Practice of Gynecology; third edition; pages 213-219.

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Diagnostic Forum

CASE OF SUDDEN COLLAPSE ON EXCESSIVELY HOT DAY; DEATH AFTER TWENTY-FOUR HOURS IN COMA

(Based on Case 15312, Case Records of Massachusetts General Hospital, New Eng. Jour. of Med., Aug. 1, 1929, p. 231).

CASE HISTORY

A Swedish carpenter of forty-seven went to work on June 7 feeling as well as usual. It was an extremely hot day, the official temperature being 94 degrees in the shade. The patient was engaged in working on the outside of a house and was in the sun most of the time. About noontime he suddenly felt weak and dizzy and was forced to sit down. In a few minutes he vomited. He had to be assisted home a few blocks distant and was put to bed. The local doctor was called at once and found him to be in a state of collapse. He was still conscious but very weak and bathed in cold perspiration. His mouth temperature was 94 degrees and his blood pressure 90 systolic and 50 diastolic. The pulse was observed to be weak and irregular but slow.

In the evennig he became somewhat stuporous, and during the night passed into gradually deepening coma. The next morning he could not be roused. Frequent observations of temperature and pulse were made by the nurse, his temperature remaining subnormal and his pulse 80 to 90 until nine o'clock in the morning, when his temperature suddenly went up to 104 and his pulse to 150.

He had always been a strong, robust man. His family could remember no serious illnesses. He was married and had two healthy grown children.

Examination at quarter past twelve p. m., June 8 showed a large muscular middle-aged man obviously moribund, very cyanotic, in deep coma. The breathing was stertorous, shallow, and slow. Turning his head on one side freed the air passages sufficiently so that cyanosis disappeared from the face. It remained however in the fingers. The skin felt very hot. It was neither moist nor very dry. The temperature one hour before examination was 104; the pulse 160, regular, the respirations 16, the blood pressure 142/80. The pupils were equal, slightly irregular; no reactions could be obtained. Fundi: the disc margins appeared slightly blurred; the vessels appeared normal; no hemorrhage or exudate. Mouth negative. Thyroid and glands normal. Heart normal in size, action very rapid but regular, sounds of good quality, no murmurs. Lungs, no dullness. The breath sounds were obscured by the stertorous breathing. Abdomen negative except for dullness extending three inches above the pubic bone, thought to be due to a distended bladder. Reflexes: knee jerks and other reflexes were not obtainable. No response on plantar stimulation.

Laboratory data. Urine: high colored, clear, specific gravity 1.034, albumin 0.10 per cent (equals a slight trace), sugar—1.5 per cent, sediment negative; diacetic acid, slight reaction; acetone moderate reaction. Blood: hemoglobin 90 per cent, reds 5,880,000, leukocytes 18,000; non-protein nitrogen 37 milligrams per 100 cubic centimeters; carbon dioxide combining power 32 volumes per cent. Wassermann negative.

While the patient was being catheterized to obtain a specimen the respiration stopped. Brief artificial respiration was employed, after which a few spontaneous irregular respirations occurred. The heart continued to beat for several minutes after respiration ceased. Death occurred about five minutes to one p. m.

At the regular meeting of the Yavapai County Medical Society, held on Nov. 26th, the following discussions of this case were given:

DR. ROBERT S. FLINN

This case report is short, clear-cut and definite. A healthy middle aged man, who has always been in good health, is suddenly stricken while working out of doors on an exceedingly hot day in June. He becomes dizzy and weak and vomits. He soon passes into coma and dies twenty-four hours later. Examination a short time before death shows a moribund man with slow shallow respirations. The physical examination is essentially negative except for the reflexes which cannot be elicited.

Probably the commonest cause of coma of this variety is some sort of cerebral accident. Cerebral hemorrhage usually causes unilateral paralysis except in rare instances where the hemorrhage is in the pons. We should also consider some heart condition such as coronary thrombosis. However, I feel that we have little evidence for either cerebral hemorrhage or a coronary accident.

The laboratory data are extremely interesting. The urine is highly colored with a specific gravity of 1.034, a slight trace of albumin, 1.5 per cent sugar with diacetic acid and acetone. The sediment is negative.

In considering whether or not this patient is suffering from diabetes mellitus, it is well to refresh our memory with regard to the causes of sugar in the urine. By sugar one usually means glucose. It is to be remembered that certain substances other than glucose have the power of reducing the copper salts to produce the characteristic Benedict or Fehling reaction. Lactose, levulose and pentose are the most important of these substances. But glycuronic acid, uric acid, hippuric acid, xanthin and alcapton also produce a reaction that may lead to error. Where there is any doubt as to the identity of the reducing substance, a fermentation test, together with the phenylhydrazine test, should be carried out. Yeast will ferment glucose to produce carbon dioxide, while phenylhydrazine and glucose produce phenylglucosazone cystals.

The presence of glucose in the urine does not necessarily make the diagnosis of diabeter mellitus certain. One must bear in mind that there are many causes, other than diabetes, for sugar in the urine. Severe physical strain often produces a temporary glycosuria, while we are all familiar with the so-called emotional glycosuria seen in severe nervous fatigue. Cerebral injury, acute alcoholism, hyperthyroidism, hepatic diseases, acromegaly, pregnancy, lactation and excessive carbohydrate intake are a number of causes of temporary or persistent glycosuria. One frequently sees cases of persistent glycosuria in which symptoms of diabetes are lacking. Restriction of carbohydrate intake fails to alter the glycosuria appreciably. Blood sugar tests show a normal carbohydrate metabolism. These are cases of so-called renal glycosuria in which there is presumably a lowered threshold for sugar in the kidney. In cirrhosis of the liver, persistent glycosuria is apt to occur, due to the inability of the liver cells to store glycogen. In cases of hyperthyroidism, glycosuria is not infrequently found. This is due no doubt to a hyperactive sympathetic nervous system and an increased glycogenolysis of the hepatic glycogen.

Turning to the case in question, we see that in addition to sugar in the urine, there is definite amount of acetone. You will remember that acidosis is common in diabetes, due to the fact that there is incomplete combustion of the fatty acids with the accumulation of the ketone bodies in the blood. Under ordinary circumstances, sugar in the urine plus acetone, is sufficient for a diagnosis of diabetes mellitus. However, glycosuria is sometimes seen in cases of heat prostration, and acetone in the urine after severe vomiting or starvation. In this case, we have other evidence in favor of diabetes; the carbon dioxide combining power of the blood plasma is 32 volumes percent. Normally carbon dioxide is present in our blood in chemical combination as sodium bicarbonate, and in physical solution as carbonic acid. By far the larger part is held in the former state. When organic or inorganic acids are produced in excess, they have to be converted into salts for their excretion by the kidney. Accordingly base is necessary and the body draws upon its main reservoir, namely sodium, which is held as sodium bicarbonate. Thus, from the chemical union, water and carbon dioxide are formed and the latter is lost through the expired air. By determining the ability of the blood to absorb carbon dioxide, we obtain what is called the carbon dioxide capacity of the blood. Normally the carbon dioxide power of the plasma is 50 to 65 volumes per cent, and 32 volumes per cent indicates moderately severe acidosis. Blood sugar determination would be extremely helpful in this case.

In favor of a diagnosis of diabetes, we have the presence of sugar and acetone in the urine and a moderately severe acidosis as shown by the carbon dioxide combining power. On the other hand, this patient gives no history of diabetes. It is also to be remembered that diabetes produces no typical pathological picture, and Dr. Mallory is apt to report the pancreas as being normal.

Assuming, if you will, that this patient has diabetes, are we justified in explaining his coma on the basis of diabetic acidosis? I think not. The onset of diabetic coma is usually very gradual, with certain prodromal symptoms such as headache, anorexia, and epigastric pain. The onset of drowsiness is gradual; the breath has the odor of acetone; evidences of marked dehydration are often present. There is usually a very low blood pressure and the intra-ocular tension is low so that the eyeballs are soft and yielding. The Kussmal or air hunger type of breathing is characteristically deep and usually rapid.

We do not think this is a case of diabetic acidosis and we must attribute the coma and death to other causes. These causes will be discussed by my colleague.

DR. W. E. McWhirt

This is an exceedingly interesting case. In our years of discussing Cabot cases I don't remember a similar case being brought to our attention. The previous speaker has gone into the laboratory findings in detail.

The four outstanding things in the case are sudden onset, the profound shock, subnormal temperature and low blood pressure.

In heat exhaustion we find such a picture as we have here. In considering heat exhaustion it is necessary to take up the mechanism of the heat control of the body. Heat is produced in the muscles and a small quantity in the abdominal viscera; heat is eliminated through the skin largely, and to a lesser extent through the lungs. The balance is maintained by the center in the brain and if anything should happen to the mechanism of either production or elimination, we would have just such a picture as in this case. The causes are numerous. One of the outstanding ones is alcohol. In the Philippine Islands, where we would naturally expect to find heat exhaustion with the high temperature and humidity, of 164 cases quoted it was found that in practically all of them alcohol played a part. Various diseases that debilitate the body also may play a part. In this particular case there is no history of alcoholism or of disease. In certain cases no cause can be found.

While this man was working in the sun, this plays no part in heat exhaustion, as practically as many cases occur in patients who are not in the sun.

The onset of heat exhaustion, or heat stroke, is sudden, although there may be prodromal symptoms for a day or so, such as malaise, headache, nausea, vomiting and diarrhea.

On first examination, the blood pressure was low (90/50) which is one of the outstanding findings in heat exhaustion, although the exact opposite may be true. The temperature is subnormal, (94°F); again you may have the opposite, depending upon the amount of trauma to the body.

There are certain complications which occur in heat exhaustion, which however, play no part in this case because he did not live long enough. They are disturbances of speech, certain muscle spasms, disorientation, and the greatest complication, if they live long enough, is pneumonia.

Quoting from Tice: "Several types have been described but there seems to be little reason for a division into clinical types, since it is a single cause, and since the apparently different forms vary only in degree of disturbance, rather than origin. It is not uncommon, moreover, for a case to be first seen as the less severely injured type in which a high temperature later develops. It is, however, true that cases tend to fall into two classes. In one, which has been described as heat exhaustion, the onset is more gradual and prodromal symptoms are always present; the temperature is seldom above 101° (38.33°C.) and frequently normal or subnormal; the pulse is small and easily compressed; the patient is usually conscious; recovery is frequently prolonged, but is complete and with no sequelae. The second type has been described as heat stroke. The temperature rises to extreme heights, unconsciousness with convulsions is common, and few or no prodromata have been noticed; the pulse is rapid but of fair volume; respirations are often of the Cheyne-Stokes type, and recovery or death usually ensues within a few hours or days. With this type sequelae have been commonly noted. It seems probable that the difference is largely one of degree, or that the individual who has rendered himself more susceptible, by errors of diet, or alcoholic excess, presents the most violent picture."

Sunstroke, insolation, sonnenstich, calenture, ictus solis, thermic fever, siriasis, heat apoplexy, heat asphyxia, heat stroke, heat prostration are some of the symptoms.

Our diagnosis in this case is Heat Exhaustion or Heat Stroke.

At the weekly meeting of the Clinical Club of Phoenix, on Nov. 25th, the following diagnostic discussions of this case were given:

DR. R. J. STROUD

This case is interesting because there are certain factors which have to be taken into consideration before making a diagnosis of sunstroke as the cause of death.

Briefly: Male, aged 49, carpenter, Swede, working in the sun at 94 degrees in the shade, and presumably in a humid atmosphere. Noontime he felt weak, sat down, vomited, had to be assisted home and collapse intervened. Conscious, very weak, cold perspiration, subnormal temp. by mouth, as low as 94. B.P. 90/50. Pulse weak irregular, but slow. Later he was stuperous, gradually deepening coma. Sudden rise of temp. to 104 and pulse to 150 from 90 at 9 a. m. and death some time in the afternoon.

Examination later shows a blood pressure of 142/80, pulse 160, resp. 16. pupils slightly irregular and equal, disc margins of fundus blurred.

Urine shows trace albumin and 1.5 sugar and acidosis. Red cell count shows polycythemia leucocytes 18,000. Heart continued to beat after respiration ceased.

This was not a cardiac death, nor was it due to brain hemorrhage, for the pupils were equal and no other sign was present that was mentioned.

Acidosis and diabetes must be considered even if the case came on suddenly in a supposedly healthy man. We have positive urinary findings to establish such a diagnosis, and yet the amount of sugar is not excessive and the rapidity of death would make us look to some other factor besides diabetes. The blood pressure picture in the first few hours (90/50) looks like diabetic but could come from any shock. The later rise of blood pressure militates against diabetic death. Breathing was shallow and not of the Kussnaul type until just before death.

There are two general types of sun stroke or heat stroke. (1). One in which there is a very sudden rise of temp. to 106, or better with hot, dry skin like a stove. Death by hyperpyrexia. (2) Subnormal temperature type with low blood pressure and shock, with later a rise in temp. or not. There is also an intermediary type showing most of the classical symptoms except that temp. is more or less normal.

With the type presented, or any type, temperatures over 87 in humid atmospheres especially with sun exposure, still air, alcoholism or undue labor in the hot part of the day are causative factors. The tendency of the "white man" to work excessively under all conditions makes them more prone to have the disease. The afternoon "siesta" really beginning at 10 a. m. and lasting until evening in peoples of tropical countries is not all laziness, but just a commonsense measure. In India through the great deltas white troops are warned about this, since deaths in the past have convinced officers that it was necessary. Here in this climate it is not always conceded that heat is a factor, but I have personally seen many of both types.

One of the features of sun stroke is that of loss of reflexes, as seen in this case, and this is not strictly characteristic here as loss of reflexes is also one of the symptoms of diabetic coma. In cases of heat stroke with recovery, recurrence may take place until the reflexes return. No mention is made of abdominal cramps, which come on later, but this patient was in coma probably before this could take place. The early vomiting is also a more or less prominent symptom of sunstroke.

Sunstroke does not give a brain lesion as a rule; generally there is a very slight meningitis, but the predominant thing is a congestion of the lungs with laking in the cells, together with passive congestion of the liver and kidneys. The excess red count could come from this laking of the serous elements of the blood in the lungs.

There is no apparent disturbance of the kidneys. The carbon dioxide combining power of 32 per cent shows a moderate acidosis. As a rule death in diabetic coma results when the combining power is below 30, and yet 32 is very much below normal.

Were it not for the sudden rise of temp. and the recorded high blood pressure, diabetic coma could very easily be the entire cause of death. It is possible that the added heat is a factor in producing the diabetic coma in an otherwise healthy man who showed no former symptoms of diabetes, which is not rare.

I lean to the heat factor as the primary cause of death and diabetes secondary with passive congestion of lungs, liver and kidneys.

DR. FRANK J. MILLOY

This is a definite case of heat exhaustion. The onset with weakness and dizziness and vomiting, passing into a state of collapse with marked subnormal temperature, fall in blood pressure and cold perspiration coming on in a healthy man who has been subjected to severe physical exercise on a very hot, humid day, is a typical history and exactly what you would expect to find in heat prostration. The extreme change in body temperature from 94 to 104 demonstrates the loss of balance of the heat regulating center. That is the physiological explanation of heat prostration.

If this patient had any organic trouble prior to this sickness there is nothing in his history or physical examination to suggest it. The fact that the heart continued beating for five minutes after death proves that it was not a cardiac death. The respiration of 16 eliminates respiratory involvement of an infectious nature. The leukocyte count of 18,000 fits in with heat prostration.

The postmortem findings will probably show an acute passive congestion or hypermia of the brain and lungs, and there will probably be cloudy swellings of the liver, kidneys and myocardium.

The discussions at the Massachusetts General Hospital on this case were as follows:

DR. JAMES H. TOWNSEND

The chief interest in this case centers about the cause of the sudden collapse and coma and its relation to thesugar and acetone bodies in the urine, Clinically the patient did not present the picture of diabetic coma. There was no hyperpnea such as is present in diabetic coma almost up to the last breath. The patient's mouth and skin were not excessively dry. The eyeballs were not soft. Furthermore, it would be very unusual for diabetic coma in an adult to come on so suddenly without any previous warning symptoms. When we examine the laboratory data closely and note that the blood sugar was only 200 milligrams per 100 cubic centimeters and the carbon dioxide combining power was reduced only to 32 volumes per cent, I think we must conclude that diabetic coma was not the cause of the death. While there was some degree of acidosis and of hyperglycemia the changes were not of the degree found in coma.

If the death was not a diabetic one, then what lesion will explain the symptoms and the laboratory findings? Could "heat prostration" or "insolation" have been responsible for the whole thing? It was one of the hottest days of the season, and the patient had been working in the sun. The clinical picture of collapse, with low blood pressure, low temperature, and feeble irregular pulse is certainly consistent with the description of one form of insolation described in the text books, and I think it is entirely possible to account for his symptoms on this basis. The terminal rise of temperature can be

attributed to a disturbance of the heat regulating center without any bactorial invasion being present. There may heve been a terminal septicemia. The hyperglycemia could be due to cerebral injury of the type found in injury in the neighborhood of the fourth ventricle, and the acidosis could be due to vomiting and starvation. It is however unusual for a strong man of this age to die of heat prostration. Post-mortem examinations have usually demonstrated some other pathology.

Could this patient have died a cardiac death? The picture certainly does not correspond with the congestive type of heart failure, but does resemble to some extent the picture found in coronary thrombosis. The collapse, vomiting, low blood pressure, profuse perspiration and weak irregular pulse could all be accounted for on this basis. It would be very unusual however to find a patient with coronary thrombosis growing worse while his blood pressure was rising to 140 millimeters. In this condition a rising blood pressure corresponds with an improvement in the general condition. Furthermore, there was no history of pain and no evidence of traeriosclerosis.

A cerebral lesion of some sort must be considered the most likely diagnosis. This could be a hemorrhage in some part not giving localized paralysis, or it might be due to a tumor. Such sudden changes often represent hemorrhage into a tumor. The hyperglycemia can be accounted for on the basis of cerebral injury. The blurring of the optic discs also fits well with this diagnosis. The terminal rise of temperature may be a part of the picture. Whether the heat of the day had anything to do with the situation is difficult to say. Possible it might have a precipitation cause.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD).

Cerebral hemorrhage.
Possibly heat prostration.

DR. TRACY B. MALLORY

ANATOMIC DIAGNOSIS

Acute cerebellar hemorrhage.

Arteriosclerosis.

Post-mortem examination showed that the essential lesion was a hemorrhage and softening in the posterior third of the left cerebellar lobe. For a fresh hemorrhage the area was unusually sharply limited and there was no infiltration of blood into the subarachnoid space. The right lobe of the cerebellum showed a slight pressure cone as evidence that it had been forced part way into the foramen magnum by increase of the cerebrospinal pressure beneath the tentorium. The meninges were clear and the larger vessels shed no marked degree of arteriosclerosis.

Microscopic examination showed the usual appearances of fresh hemorrhage and softening and confirmed the gross impression that no tumor was present. On the borders of the lesion and also in other parts of the brain an occasional small artery showed a perivascular collection of lymphocytes. The other organs were essentially negative except for the left coronary artery, where a calcified plaque was found which considerably narrowed but did not occlude the vessel.

TWO AND A HALF MONTHS' VOMITING AT AGE OF SIXTY-TWO

(Case 15231, Case Records of the Massachusetts General Hospital, New Eng. Jour. of Med., June 6, 1929, p. 1211).

CASE HISTORY

An American watchmaker sixty-two years old entered December 28. The chief complaint was almost constant nausea with occasional vomiting for about two and a half months.

From the age of eight he had indigestion,—pain in the epigastrium beginning an hour and a half after meals and relieved by soda or food. Later on the symptoms increased, with nausea relieved by washing the stomach. Sixteen years before admission an x-ray examination showed nearly complete obstruction at the pylorus. Operation showed obstruction. A gastro- enterostomy completely relieved his symptoms. Seven months before admission he vomited bright red blood. Hhe became unconscious and remained stuporous for twenty-four hours. For the following week his stools were black. For a month after the hemorrhage his body felt numb and his mind was cloudy. For six weeks his legs were swollen. He improved enough to return to work and even gained six pounds, but continued to have nausea at intervals. Since the attack he had had frequency of urination five or six times a day and once or twice at night. Two months and a half before admission the nausea became marked and persistent. Twice he vomited nothing but "bile." A month later he noticed light stools and slight yellowness of the skin. For five weeks his feet and legs had been swollen and his feet numb, especially by day. For three weeks his prepuce was swollen. He had lost thirty-five pounds.

His father died at seventy of "galloping consumption." The patient was exposed. His mother died of cancer of the stomach. A brother died of perforated gastric ulcer.

The patient had scarlet fever, typhoid fever and possibly rheumatic fever in childhood.

Clinical examination showed an emaciated man. Many carious teeth. Marked pyorrhea. Tonsils large and injected. A few enlarged left axillary glands and numerous cervical glands, ¼ to ½ inch in dwiameter. Heart not enlarged. Sounds and action normal. Pulmonic second sound slightly accentuated. A soft systolic murmur at the apex. Radials and brachials only slightly sclerotic. Blood pressure 120/80. Lungs clear. Abdomen distended, tympanitic. Masses in both lower quadrants, small rounded tumore over which the outer portion of the abdominal wall was freely movable. Liver enlarged; edge felt. Moderate edema of the legs. Rectal examination showed numerous irregular soft masses around the rectal wall which felt like folds of mucous membrane. No indurated masses could be felt, but the rectal wall was definitely abnormal. Pupils and reflexes normal.

Amount of urine not recorded, specific gravity 1.030, the slightest possible trace of albumin at the single examination, sediment not remarkable. Blood: 16,800 to 16,000 leokocytes, 60 per cent polymorphonuclears, hemoglobin 75 per cent, reds 4,750,000, slight anisocytosis. Smear otherwise normal. Hinton negative. Nonprotein nitrogen 32 to 40.

Before operation chart not remarkable except for a temperature of 99.° the day of admission.

The patient had nausea throughout the day on December 30. That night he began to complain of severe sharp constant epigastric and upper abdominal pain, more marked on the left. An enema was given with gas and fecal results. He belched a good

deal of gas. A large doughy irregular mass was first noticed in the left upper quadrant that night. The following day the pain continued. Six or eight times vomiting was induced, always with relief.

December 31 operation was done. That night the patient died.

At the Nov. 26th meeting of the Yavapai County Medical Society, held in Prescott, the following discussions of this case were presented:

DR. CLARK B. DIVINE

The presenting symptom in this case is undoubtedly the severe nausea and vomiting that existed for two and a half months prior to admission to hospital.

The causes of vomiting can be divided into two great classes: neurotic and organic. Neurotic vomiting includes the largest number, more than any other type of vomiting, or all of them put together. There are certain individuals who are able to vomit almost any time; if they have a little distress below the sternum, a finger in the throat or not, and they are able to vomit. There are others who will vomit because they get sympathy. This includes the great class of gastric neuroses. Under the organic type we have four great heads: cerebral, pharyngeal, vomiting in the gastric crises of tabes, and the gastrointestinal type.

Cerebral vomiting is, as you know, apt to be due to irritation of the brain or meninges, and is projectile in type. It comes on suddenly without very much nausea. Probably also included in this type, is the reflex vomiting and the vomiting due to great pain or emotional stress; also the vomiting that occurs in certain toxemias like the toxemia of pregnancy.

Pharyngeal vomiting includes most of the vomiting due to drinking and smoking; and some of the vomiting in tuberculosis, due to irritation of the pharynx, constant hocking and clearing of the throat.

The cause of vomiting in tabes has not been very well worked out.

The gastrointestinal type I have left to the last purposely because I think we can exclude the others mentioned as not concerned in our case. Aside from the acute appendix, acute and chronic gastritis and the thousand and one things that cause vomiting from the gastrointestinal tract, there is one cause I want to draw your attention to particularly, and that is obstruction. Obstruction may be either acute or chronic, it may be accompanied by peritonitis or not, but obstruction of the bowel causes an intense and constant vomiting. In neoplasm in the stomach or gastrointestinal tract, the symptoms and signs are practically the same. You have gastric stasis, hypomotility and achlorhydria in either one. So unless there are other things present, you can not make a distinction between the two types. We really should have gastrointestinal x-ray here, but we have no report of such.

This patient got along all right after a gastroenterstomy for a period of sixteen years. He undoubtedly had gastric ulcer at first, and then, suddenly, about seven months before admission to hospital, something else broke loose and he vomited blood. He probably vomited quite a lot of blood because he was unconscious afterwards, for twenty-four hours stuporous and after that for a month his mind was cloudy; for a week his stools were black from the blood he had passed, so that he must have had quite a big hemorrhage.

Where did that hemorrhage come from? We know, or believe, that he had an ulcer and we also know that five to ten per cent of ulcers become malignant. We also know that in cases of gastroenterostomy, the site of the wound produced often becomes malignant.

Further along in the history it says that he became yellow and the stools were light colored. That might have been due to increased size of the pylorus pressing on the common duct, or head of the pancreas pressing on the duct. Often at the same time there are varices at the junction of the esophagus and stomach which are liable to rupture and cause hemorrhage.

We know that something did happen at this time that caused a profound change in the patient's condition.

DR. C. E. YOUNT

This American watchmaker, 62 years of age, whom we believe to have died of abdominal carcinomatosis, presents at least five points of special interest:

1. Family history,
2. A "dyspeptic" from childhood,
3. A dyspeptic child, in adult life, develops or reveals pyloric stenosis at the age of forty-six,
4. A gastro-enterostomy gives complete relief from obstructive symptoms for fifteen and a half years.
5. In the terminal stage of an abdominal carcinomatosis, an operation is performed to relieve intestinal obstruction.

1. THE FAMILY HISTORY: This patient has a childhood exposure to tuberculosis, his father having died of "galloping consumption" at the age of seventy. Surely seventy is a ripe old age for miliary tuberculosis, for while it may occur at any age period, it is far more common in early life than later. In the majority of cases in which the disease does occur in adults, the patient is known to have a chronic pulmonary lesion or to have been subject to a chronic cough. This childhood exposure to tuberculosis may be briefly summarized as follows: "That tubercular infection occurs after and not before birth is an undoubted fact, subject to few exceptions. The opportunities for acquiring the disease when it exists in family members are manifold. The children born into tuberculous families seem to possess tissues peculiarly vulnerable, and often show the delicacy of physique and deficiency in chest capacity associated with a pretuberculous state." A practical evaluation of this exposure is seen in the Life Insurance Actuary's rule, "An applicant's liability to tuberculosis varies inversely as the ratio of healthy to infected family members"—(Green, Osler & McCrae.)

His mother died of cancer of the stomach. There are many cancer research students who place little credence in inherited predisposition to cancer. But, be that as it may, the actuaries of our big Life Insurance Companies all, without exception, continue to require an answer to this question of each prospective applicant for a life insurance policy. Life insurance, then, which is based on "life expectancy," evaluates inherited predisposition to cancer and childhood exposure to tuberculosis with scientific exactness in which "the dollar" is not an unknown factor to be represented in the insurance equation by X.

A brother died of a perforated gastric ulcer. This gives us a mother and two brothers with serious gastric lesions and would seem to bear out the point which I have tried to make concerning heredity; that certain families of individuals are predisposed to acute and chronic gastric conditions.

2. A DYSPEPTIC FROM CHILDHOOD: That rare diagnostician and teacher, the late Sir William Osler, pays his respects to this type of case in these words, "The term chronic dyspepsia should not be despised. It may be that after some time even functinonal disturbances lead to pathological changes in the gastro mucous membrane." Our history does not take us back to infancy in considering the origin of his stomach trouble, and yet we picture him as one of those cases of congenital pyloric stenosis which did not result fatally in infancy. Whether this condition often gives trouble in later life can not be definitely stated. The hypertrophy is certainly very slow in disappearing. A tumor has been found at autopsy in children dying of intercurrent disease as long as six months after recovery from all symptoms. (Holt). However, our history starts with our patient at the age of eight years—"From the age of eight he had indigestion, pain in the epigastrium beginning an hour and a half after meals and relieved by soda or food." Let us pause for a moment to consider the possible diagnoses at this point: chronic gastritis, ulcer of the stomach, duodenal ulcer, pyloric obstruction. We know that chronic gastric indigestion complicates many of the constitutional diseases of childhood, especially rickets, syphilis, tuberculosis and malnutrition. The most constant symptom, according to Holt, is vomiting, which may occur regularly after meals or only in the morning before breakfast. Ulcer of the stomach, Holt classifies under four heads:

1. Ulcers of the newborn,
2. Ulcers resulting from acute gastritis,
3. Tuberculous ulcers, and
4. Simple perforating ulcers.

All of these are rare. In 119 autopsies on tuberculous cases, five gastric ulcers were found but only three of these were tuberculous. Gastric ulcer in infancy and childhood often goes undiagnosed unless there is hemorrhage or a post mortem examination. But the fact remains that the prognosis is bad in all forms of ulcer of the stomach.

Duodenal ulcer was formerly considered rare in infancy and early childhood, but now, with better diagnostic methods, they are more often recognized, and their ratio of frequency to gastric ulcer has been placed as ten to one (Eintz). In over one-third of the recorded cases no symptoms suggestive of the condition were present. The only definite symptom pointing to duodenal ulcer is hemorrhage. Blood may be vomited or passed in the stools. In 64 cases of ulcer reported with good histories, bloody stools were observed in 26, bloody vomit in 10, and both in 6. The prognosis of duodenal ulcer at present is very bad. The finding of healed ulcers at autopsy proves that **recovery does sometimes** take place, but it must be considered rare.

I have pictured this case as one of congenital pyloric stenosis and was glad to find an article by Burrill B. Crohn of New York (J.A.M.A. Jan. 21, 1928) reporting a case of congenital pyloric stenosis in adult life; vomiting was the chief symptom. Not only did she recall no time or period in her life when vomiting was absent, but she was told by her mother that throughout her infancy vomiting had been a prominent symptom.

Mayo-Robson and Moynihan mention a case of a boy eleven years of age who had suffered from infancy with abdominal distention, pain and copious vomiting. At operation the typical, concentric, thickened ring of hypertrophy round the pylorus was found, about a finger-breadth, without any cicatrix or other adhesions that could arouse suspicion of a preceding inflammation. The surgical treatment is either by the Fredet-Rammstedt operation or a gastro-enterostomy. But Alfred Brown of Omaha (Annals of Surgery, Oct. 1929), makes this very good point in favor of the Fredet-Rammstedt operation; in congenital hypertrophic pyloric stenosis, the strongest argument in favor of surgical intervention, even in mild cases, is the permanance of the tumor when treated by other methods. That it is permanent is demonstrated in three ways: (1) Wollstein has shown that in cases which have died under medical treatment there is no change in the tumor and that gastro-enterostomy, 'though it relieves the symptoms and results in a clinical cure, has no effect on the tumor at the pylorus which remains unchanged. (2) Oliver reports a case in an adult of fifty-one years in whom a typical tumor was found and the patient recovered after a Rammstedt operation. Strachauer reports a similar case in a young man of twenty-one years with recovery after a similar operation. Cantley and Dent, Maylard, Landerer and Russel have also found tumors of the pylorus in adults which they believed to be congenital. (3) Histologically, the tumor may undergo more or less fibrous change and thus tend to increase the amount of constriction as shown in one of Brown's cases.

3. A DYSPEPTIC CHILD IN ADULT LIFE DEVELOPS OR REVEALS PYLORIC STENOSIS AT FORTY-SIX YEARS OF AGE: From the age of eight years to forty-six years the only history we have is that the symptoms increased, with nausea relieved by washing the stomach. Here are thirty-eight years of dyspepsia in which all the symptoms are increased and the nausea relieved by gastric lavage. This picture would be a classic of pyloric obstruction if something had been recorded concerning a dilated stomach. We believe that if the records of the operation are found, the stomach will have been shown dilated. The x-ray is positive for nearly complete obstruction at the pylorus. The operation showed the obstruction and the gastro-enterostomy completely relieved this symptom of thirty-eight years' duration. What caused the pyloric obstruction? This may be a case of congenital pyloric stenosis resulting in hypertrophic stenosis of the pylorus at forty-six. It may be due to an ulcer located near the pylorus, either peptic or duodenal, with marked hyperplasia. It may be one of the benign tumors, polypi, angioma, fibroma. It could hardly have been a cancer at the pylorus because the symptoms were relieved by gastro-enterostomy for fifteen and a half years, and even the slowest growing of all the gastric cancers, linitis plastica, would hardly have been thirty-eight years in developing, and then be held in abeyance for another fifteen and a half years by a gastro-enterostomy. Eusterman and Sentry, in describing benign tumors of the pylorus, mention two myomas in men aged sixty-six and forty-four respectively. Both had marked myomatous hypertrophy involving more or less of the entire pyloric ring, and presenting a palpable tumor. Both patients had distressing gastric symptoms over a long period, in many respects simulating gastric ulcer. Of further clinical diagnostic importance is the fact that these benign tumors may cause complications such as pyloric obstruction, intussusception of stomach into duodenum, recurring severe gastro-enteric hemorrhage, strangulation, severe colic and malignant degeneration and even perforation.

4. A GASTRO-ENTEROSTOMY GIVES FREEDOM FROM OBSTRUCTIVE SYMPTOMS FOR FIFTEEN AND A HALF YEARS: Balfour makes a curious observation to the effect that "twelve years ago insurance actuaries showed that in three thousand patients who had been operated on for

duodenal ulcer, the life expectancy was actually better than that of the general population group of the same age and sex.? Our patient could well be cited as coming under the benefits of operation, but up to this time we have not proven the rationale of the "cure." Was it because an obstruction per-se was relieved of its mechanical effect, or was there an added factor, the gastric juice is no longer "squirted" on the duodenal ulcer? Dr. Charles Mayo says that he believes the primary cause of ulcers of the stomach is acid. Next he looked on them more and more as having to do with the sympathetic nervous system, and that brings us to this thought: Surgery is so rapidly capitalizing the success of physiological experiments upon the nervous system that the average medical man doing surgery can scarcely keep abreast of the literature, let alone master the technic of its new operations. We have phrenico-exeresis for its salutary effect on many pulmonary conditions; cervical sympathetectomy for angina pectoris; sympathetic ganglionectomy and trunk resection for the treatment of chronic arthritis; periarterial sympathetectomy for endarteritis obliterans, and finally, as suggested by Crile and performed by Drs. Charles Mayo, Schiassi, Leriche and others, cutting of the left (right) vagus in the abdomen, or cutting the sympathetic nerve supply about the pylorus to "de-Kenetacize," relieving the patient of his accelerating mechanism. Mayo finds that by cutting the nerves in the human being he has caused reduction of acidity.

Finally, after fifteen and a half years, the picture changes very abruptly. Did the gastro-enterostomy ultimately fail, or has a new condition, a malignancy, engrafted itself either upon the pyloric stenosis, the gastro-enterostomy suture line, or has it an entirely new origin? Of malignancy there is no doubt in the minds of our group. Its possible origin we approach with due circumspection.

The new symptoms are first a massive hemorrhage seven months before admission to hospital, or at the age of sixty-one. He vomits bright red blood, becomes unconscious and remains stuporous for twenty-four hours. For the following week his stools are black. For the next month his body felt numb and his mind was cloudy. For six weeks his legs were swollen. This was followed by slight general improvement but the nausea continued.

Considering the least important symptoms first, —unconsciousness, stupor, body numb for a month and mind cloudy; massive hemorrhage causing a condition of severe sudden anemia could cause this condition. We have seen a case of massive hemorrhage in this hospital in which the patient was in a condition of extremis for three or four days, had mental cloudiness and disorientation, not due to sedatives.

There was also increased frequency in urination since the attack. Tracing this down, we can assign no particular importance to it as there are no other symptoms suggestive of prostatic obstruction or malignancy in prostate. From our viewpoint, the hemorrhage is very important but also confusing. A "dyspeptic" is forty-three and a half years affected before this symptom manifests itself, and it is the only hemorrhage. What is its source and how do we evaluate it in our case? We will use Balfour's classification of hematemesis to show the factors which must be considered in arriving at a conclusion:

Intragastric conditions: ulcer, cancer, syphilis, tuberculosis, hemorrhagic erosions, gastritis in various forms, benign tumors (polypi, angiomas, fibromas), linitis plastica, foreign bodies, operations on the stomach, caustics, aneurism.

Extragastric causes are: duodenal ulcer, diseases of the liver (cirrhosis in various forms), disease of the biliary duct (obstruction from stone, carcinoma, or stricture), diseases of the spleen (splenic anemia, leukemia, hemolytic jaundice), diseases of the gall bladder, pancreas, appendix, small or large intestines, cardiac and pulmonary disease, lesions of the mouth, nose, pharynx or esophagus, nephritis, disordered conditions of the blood, cholemia, chloroses, pudpura, melena neonatorum, hemophilia, acute febrile diseases, hypertension, external trauma.

With the blood picture before us, 16,800 to 16,000 leukocytes, 60 per cent polymorphonuclears, hemoglobin 75, 4,750,000 reds, we rule out the leukemias and blood dyscrasias. The failure of the hemorrhage to recur during the remaining seven months of his life, in spite of continued vomiting and almost constant nausea, suggests that if it was due to an eroded vessel or ulcerated area in the primae via, that there should have been other and more severe hemorrhages. Instead, we have bile vomited twice, stools light, and slight yellowness of the skin. It is probable that our hemorrhage, when it occurred, was extragastric and we think of cancer of the head of the pancreas or about the gall bladder or duodenum as causing the jaundice, light stools and edema of the legs, prepuce and rectum.

At this time I would like to digress to discuss some of the end results in gastro-enterostomy. Since Wolfer performed the first anterior gastro-enterostomy in 1881, the literature has been replete with discussions concerning the technic of gastro-enterostomy, especially with reference to the anatomical location of the stoma in relation to the stomach and jejunum, and the type of suture and suture material to be used. In the earlier operations, linen and silk being non-absorbable, were responsible for sloughs, hemorrhage and the occurrence of ulcers in the suture line. Today some surgeons are using catgut to the mucosa and muscularis, and linen or silk to the serosa. Others use catgut throughout. Catgut to the mucosa is discarded by Finney in his pyloroplasties because he found as many as 25 per cent recurrence of ulcer. He tried to trace cases accurately. The recurrence was along suture lines. He now sutures the peritoneal and muscular coats of the stomach, catching the vessels of the submucosa, and when the duodenum is reached, the whole wall is caught in the suture. Balfour states that, "It is most important for example, that trauma, particularly to mucosa of the stomach and jejunum, be reduced to a minimum. I am convinced that some recurrences can be attributed to devitalization of mucosa near the line of anastomosis. A second principle is that a radical change should be made in the type of gastro-enteric anastomosis. A third principle involves the use of a jejunostomy tube for feeding in cases in which the lines of anastomosis have been difficult to establish. A fourth principle is that such patients must realize that every possible contributory factor to the tendency to recurrence should be eliminated. Tobacco and alcohol should be prohibited; foci of infection should be eradicated (our patient had infected tonsils and pyorrhea); a most meticulous dietary regimen should be maintained, and proper adjustment of bodily acitvity and relaxation should be made. The maxim of such patients should be: 'Alternate rest and labor—long endurance'". (Annals of Surgery, October, 1929, page 537.)

Back in 1921 Balfour stated: "There is one certain fact, namely, that no operation for gastric ulcer will absolutely assure a patient that he will not

die of gastric cancer." Cancer has been known to develop during a seven year period in 33 of 799 cases of gastric ulcer in which operation was performed in the Mayo clinic. Eiselburg estimates four percent of cancers develop in gastric ulcers for which gastro-enterostomy alone was done; and Coffee says we have more cancers when the ulcer is excised; then Broders tells us that 50 per cent of benign ulcer specimens restudied after death of the patient from cancer of the stomach, showed "cancer" in the original ulcer, after painstaking search.

Applying some of the foregoing studies to our case, we find a bad heredity pointing to the stomach. The pylorus almost completely occluded as shown by x-ray study and corroborated at operation. The gastro-enterostomy is a "cure" for fifteen and a half years. Abdominal carcinomatosis is, we believe present and should have had its primary origin either in the pyloric region or the gastro-enterostomy suture line. But we have had only one hemorrhage and that seven months before admission; there is no palpable tumor in the region of the duodenum or stomach; the liver is enlarged, its edge fout; nausea and vomiting are again the chief symptoms, to which is added positive evidence of obstruction to the circulaiton within the abdomen. Are we dealing with primary extragastric malignancy? If we maintain that position, we must disregard the influence of heredity and the x-ray and operative evidence already clearly set before us. We believe the prostate as a primary source of cancer is out of the picture. The rectal examination, while very incomplete, is to us suggestive of edema of its mucosa rather than malignancy. A primary cancer of the rectum would have many positive symptoms in seven months where metastases were as great as in our case. Hodgkins disease, the leukemias and nephroma are ruled out, we believe, by the laboratory data presented. We have not ruled out syphilis, which could cause many of the symptoms presented, but we have no reason to question a negative Wassermann.

Tuberculous peritonitis: Again heredity must be considered. He has had a definite childhood exposure. He has had a hemorrhage which, while we do not believe it came from his lungs, has as yet not been located as to source. Tuberculous peritonitis with ascites may simulate gastric cancer with secondary peritoneal involvment. However, it occurs usually in younger subjects, runs a more protracted course, with exacerbations and remissions, and is accompanied by more persistent irregular fever. No occult bleedings occur. However, in tuberculosis of the gastro-intestinal tract, which is often associated with tuberculosis of the lymph nodes and the peritoneum, there may be hemorrhage. The distended, tympanitic abdomen, with small round tumors over which the outer portion of the abdominal wall was freely movable, and masses in both lower quadrants, together with enlarged axillary and cervical glands, could be tubercular, and we have seen just such a case within the past year come to operation and post mortem, with a diagnosis of cancer, when the true condition was tuberculous peritonitis. But the preponderance of evidence is against such an interpretation in our case, and it was not noted at the gastro-enterostomy operation, or rather was not so recorded in the history.

5. IN THE TERMINAL STAGE OF AN ABDOMINAL CARCINOMATOSIS, AN OPERATION IS PERFORMED TO RELIEVE INTESTINAL OBSTRUCTON: The patient had nausea throughout the day of Dec. 30th. There is no mention of blood or coffee grounds vomitus. An enema was given followed by gas and fecal results, but no tarry stools or blood are recorded. Instead, severe, sharp, constant epigastric and upper abdominal pain, more marked on the left, is noted. This is followed that evening by the appearance of a large doughy irregular mass in the upper left quadrant. The pain continues unabated, he is operated Dec. 31st, and died that night. Our group believes that intestinal obstruction has occurred, but whether due to volvulus, intussusception or metastatic growth, we do not know. The operation may have relieved the obstruction, but the patient died.

Our diagnosis: 1. Pyloric obstruction, possibly congenital.

2. Primary cancer within the abdomen, its exact origin undetermined, probably at the gastro-enterostomy suture line.

3. Intestinal obstruction.

The Clinical Club of Phoenix, at their weekly meeting of November 25th, presented the following discussions of this case:

DR. HOWELL RANDOLPH

The essential pathology in this case centers about the stomach. The early symptoms present are those of gradually developing obstruction of the pylorus due probably to ulcer in that region. Recurrent epigastric pain relieved by soda or food, when considered in the light of subsequent developments, point quite definitely to such a conclusion. This man was evidently presented with fifteen additional years of life by gastro-enterostomy. It would seem that this period might have been prolonged even more, if he had been under careful medical supervision, and if the septic foci in the mouth and throat had been removed.

The extreme collapse occurring seven months before death was undoubtedly the effect of exsanguination by hemorrhage from an ulceration, probably located at the margin of the gastro-enterostomy opening. From that time on, signs of obstruction to the opening progressed. The loss of thirty-five pounds might have been due to the development of malignant disease primarily, but the relatively high hemoglobin and red count make starvation due to obstruction more likely.

In the absence of cardiorenal disease, the edema and numbness of the lower extremities and prepuce indicate obstruction to the venous return, probably above the origin of the spermatic and renal veins. The absence of superficial dilated veins might indicate an associated arterial obstruction.

The cervical adenopathy and multiple abdominal tumors, with low grade fever, and leucocytosis, make one think of a possible Hodgkins disease, although this is very unlikely. The enlarged glands are explained by teeth and tonsillar infection. Leucocytosis and fever are commonly present in malignancy.

About ten per cent of gastric ulcers develop into carcinoma. Well over fifty per cent of carcinomata of the stomach originated in ulcers (Mayo reports indicate that nearly 100 per cent develop from ulcers) although it is not infrequent to have a cancer progress to an advanced stage before sufficiently severe symptoms develop to bring the patient to a doctor.

Age, hereditary predisposition, and chronic irritation are certainly for malignant growth of the stomach in this case.

DIAGNOSIS, Carcinoma of the stomach with ulceration, causing obstruction of the gastro-enterostomy opening and obstruction to the circulation of the lower extremity. Gravity metastasis to the peri-

toneum of the pelvic region, which may be sufficiently large to cause the obstruction.

The following discussions of this case were given at the Massachusetts General Hospital.

DR. RICHARD C. CABOT

The introductory paragraph makes us think of cancer of the stomach as a snap diagnosis.

He certainly began young with his symptoms.

That operation sixteen years ago could not have been for obstruction by cancer, because he could hardly have lived so long since then. There is only one other thing that the pylorus could have been obstructed by, so I shall change the diagnosis at that period to ulcer.

When that gastro-enterostomy was done they had a good chance to look into the stomach. He lived sixteen years after that, so I think there is no considerable question that he had a gastric ulcer sixteen years ago.

His body feeling numb and his mind cloudy was I suppose the result of anemia caused by the hemorrhage.

I do not know any way in which an uncomplicated peptic ulcer without very recent hemorrhage could lead to edema such as he shows. Suppose he has got over the anemia from that previous hemorrhage and still develops edema. There is no way that peptic ulcer could cause such edema as is here described unless just after hemorrhage. Great anemia of course, as from hemorrhage, could cause edema of the legs.

Certainly there is a stomach history in the family, although ordinarily we do not think of these things as important in the family history.

NOTES ON THE PHYSICAL EXAMINATION

The gland measurements are big enough to be suspicious I should say. One-half inch in diameter is more than you would expect to find in normal glands.

Just why the pupils and reflexes were normal I do not know. We shall have to come back to that.

DIFFERENTIAL DIAGNOSIS

We are dealing with an abdominal case presumably,—a gastro-intestinal case. There was no evidence by barium meal of stomach pathology. We are dealing with an abdominal lesion which has led to emaciation, to a slight secondary anemia, to a very constant vomiting both before and after he came here. It has not so far as I see led to intestinal obstruction. Nothing is said of that in the history, and they got a fair result from an enema. Nevertheless there were some masses scattered around in his abdomen which so far as I know still may be fecal masses. We have a definite statement that the conditioin of the rectal wall is not normal, that the liver is enlarged, and that the legs are swollen. That is all we have until just before operation, when we have an attack of pain which makes us think of a perforative peritonitis with operation and death.

What was the date of that x-ray, Miss Painter?

Miss Painter: It was done on the 28th.

Dr. Cabot: So that this attack of what sounds like perforative peritonitis was two days later than the x-ray examination. The fact that nothing such as could cause that was found there does not prove that something was not there, though it makes it hard to say what it could be. Perhaps we can put it this way. This is in the stomach or out of it or in both places. Let us take these three possibilities. Suppose it is a lesion in the stomach. What could it be? I do not know any lesion that will account for all the facts that have been given us. There are only two diseases of the stomach that we consider in a case like this, ulcer or cancer. Take ulcer. I have no doubt he has had it, but the quesis, is it now active? Is it an important factor in the cause of his death? Did it perhaps perforate? I can not see how an ulcer with or without perfora- I can not see how an ulcer with or withou tperforation can possibly account for all the facts in the case. It certainly can not account for the edema. If these lumps are not fecal masses but something else, they have still to be accounted for. If they are really fecal there is probably nothing wrong with the rectal wall. Anyway ulcer can not account for them.

It is not at all common to see a man so emaciated as he was from an ulcer that has not given more obvious trouble than this. I think I shall have to take back that last statement, because I read "two months and a half before admission the nausea became marked and persistent." If nausea is persistent enough to lead to a person's not getting food it can cause emaciation in two months and a half. Whatever the cause of his nausea was, even if it was not a gastric lesion, it might have caused his emaciation. The difficult thing is to see how he could have had such constant nausea from an ulcer which when the x-ray was done did not block his pylorus and therefore was not causing any considerable obstruction. You do not expect much nausea unless there is obstruction, and we do not seem to have any good evidence of obstruction here. So I see great difficulties in saying that is ulcer. If he has one I believe that it is not important in relation to his death.

Now let us take cancer. I should have very little difficulty in making a diagnosis of cancer of the stomach, very possibly with perforation at the end, if it were not for this negative x-ray. Negative x-ray is a considerable bunker in the way of the diagnosis of cancer of the stomach, but it is not conclusive. I remember very clearly two cases where Dr. Holmes and I were in doubt about this and where on the whole Dr. Holmes felt ready to say, "No, there is no evidence of cancer here," and yet operation showed that it was there. You may get negative x-ray with cancer on the posterior wall often high up. Cancer of the pylorus I suppose it is safe to say would never be missed by a good x-ray man. Dr. Holmes is always ready to say that he may miss it. So we have to recognize that as a rarity. I do not like to make a diagnosis on such a supposedly rare thing.

Suppose we go outside the stomach altogether. Take the second turning of the road that I suggested a minute ago. What could this be outside the stomach? (a) It seems to be a non-febrile condition. There is very little said at any time to suggest fever. Could it be a tuberculous peritonitis or any other infectious lesion involving the abdomen? I think not. (b) Could it have been a cirrhosis of the liver? It is conceivable that the hemorrhage may have been due to that cause. He has edema of the legs, which often goes with cirrhosis of the liver. He was once said to have a suggestion of jaundice. But they certainly would not have operated on him for cirrhosis of the liver. That acute attack at the end is not like cirrhosis of the liver. (c) Could it have been some malignant disease of the rectum? He is said to have an abnormal rectal wall. Could these other tumors in the abdomen represent fecal masses backed up behind the stricture? I think they might. I do not see how anybody could deny that possibility. Then the terminal lesion will be a per-

forative peritonitis by reason of this obstruction, perhaps independent.

Dr. Tracy B. Mallory: I think I can state a little more exactly the findings on rectal examination. What the man who made the rectal examination felt was a diffusely thickened mucous membrane. There were no masses as such, but the folds of mucous membrane were much thicker than normal.

Dr. Cabot: Our job, therefore, is to see what that means. If the folds are thicker than normal what may be the cause? One does not hear of diverticulitis so far down as that, as far as I remember. Diverticulitis of the rectum does not seem proper for us to consider. Could this be some type of enteritis, ulcerative or other, which of course often gives thickening of the rectum and of the whole sigmoid and colon even? We have no symptoms of that. Could the thickening of the rectal wall be merely edema? He has it elsewhere. May he not have it there? I never heard of it. So I do not know what to make of that statement about the thickening of the rectum.

Why should his liver be enlarged? I do not know. I can not hitch that up with any diagnosis I can make. We can not say cancer of the liver. It does not lead to any such stormy attack as he had there just before death. He certainly would not have been operated upon if they had known he had it.

I believe they operated for perforative peritonitis. Sometimes the only way to know what you have in the abdomen is to go in as soon as you can to give the man a chance, whether you can make a diagnosis or not. I feel quite sure that they thought this was the thing to do and they did it. I have nothing to add as to the cause of that perforation. It might be the perforation of a peptic ulcer which has been there a long time, has not given any trouble, and which was very possibly, very probably independent of some of the other long-standing features of his case such as edema.

Running rapidly through the other causes of upper abdominal acute peritonitis, could he have had an acute pancreatitis? There is some suggestion in the mass on the left under the lower ribs. One looks there for masses in pancreatitis. He is at an age when pancreatitis is not unusual. He might have had gall stones. But that of course would not be the cause of his prolonged emaciating illness. Could he have an acute gall bladder? I do not see how he could. If he has there is certainly nothing on record to suggest it to our minds beyond the fact that it is one of the causes of perforative symptoms in the upper abdomen.

I feel very much at sea. I have very little idea what this man had. I have a feeling that he had malignant disease and that it was below the diaphragm, that it probably involved the intestine or the omentum and very possibly the root of the mesentery. How it got there or from what source it came there, if it did, I do not know. That malignant disease might I suppose have been connected with perforation of the intestine, as I have already suggested. I think I will go on record as believing that he did not have cancer of the stomach. I am not willing to say that he had an ulcer that perforated, though that seems perfectly possible. With these odds and ends of inconclusive diagnosis I shall have to stop.

PRE-OPERATIVE DIAGNOSIS

Intestinal obstruction.
Lymphoblastoma.

OPERATION

Spinal anesthesia. The patient was almost moribund on the table and there was some question as to whether anything should be done. It seemed on the whole as if the attempt might be worth while because it might be possible to relieve the obstruction.

A median epigastric incision was made. There was a moderate amount of free fluid. The mesentery and omentum were edematous. The small intestine was engorged. There were numerous large soft mesenteric glands. One of these was removed for examinatoin. It looked like malignant lymphoma. There was some sort of vague mass behind the stomach.

At this point the patient was so near death that the operation was concluded immediately without determining exactly what the intra-abdominal situation was.

FURTHER DISCUSSION

They were perfectly right not to push any further.

What might the numerous enlarged mesenteric lymph nodes mean? They might be lymphoma of course, and the other nodules that have been felt might be the same thing there and in the intestine, and in connection with that perforation took place. They might be connected with those glands in the neck. I felt some suspicion about that, but dropped it earlier.

A Student: Would it not be possible for it to be malignancy around the pylorus that would not show after gastro-enterostomy?

Dr. Cabot: I do not believe so. I am sorry there is no x-ray expert here. That is one of the places that I know nothing about.

Was the icteric index taken?

Miss Painter: It was three.

A Student: It might be another case of abdominal tuberculosis.

Dr. Cabot: I am betting against that. We had a case of abdominal tuberculosis at the Brigham last week; but there was some fever in that case.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinomatosis.
Intestinal obstruction.

DR. RICHARD C. CABOT'S DIAGNOSIS

Probably malignant disease of the intestine or the omentum, possibly involving the root of the mesentery.
Possibly perforation of the intestine with peritonitis.
Possibly ulcer of the stomach with peritonitis.

DR. TRACY B. MALLORY
ANATOMIC DIAGNOSIS

1. Primary disease.
   Lymphoblastoma involving the stomach, intestine, lymph nodes, liver, spleen.
2. Secondary or terminal lesions.
   Strangulated hernia.
   General peritonitis.

Dr. Mallory: This case was quite unusual in several repsects. The fundamental condition is a relatively uncommon but by no means rare abdominal lesion,—that is, a lymphomatous process restricted almost entirely to the intestinal tract but appearing in several isolated foci. There were numerous small tumors in the stomach. There was a marked infiltration of nearly 15 cm. of the terminal ileum and a portion of the cecum, and there was also a diffuse infiltration of the rectal wall, the latter in my experience being a relatively uncommon site for lymphoma. I think, however, the picture for that rectal mucosa was sufficiently characteristic so that possibly it could have been diagnosed by a protoscopic examination. The terminal event was a strangulated hernia of several loops of ileum through the old operative wound in the mesentery

made at the time of his gastroenterostomy seventeen years ago. Several loops of ileum had pushed through the opening in the mesentery, their circulation had been cut off, and they were undergoing necrosis. The extremely poor condition of the patient and the necessary briefness of the operation prevented them from carrying the operation far enough to recognize the lesion.

Dr. Cabot: Did it look as if he had ever had an ulcer in his stomach?

Dr. Mallory: Yes. There was a very definite healed scar at the pylorus, almost completely occluding it.

Dr. Cabot: Did the liver show anything?

Dr. Mallory: The liver and spleen were both considerably enlarged. I think the spleen should have been felt clinically. It weighed 500 grams. The liver was noted to be somewhat enlarged clinically. They were both diffusely infiltrated.

A Student: Were the neck glands enlarged?

Dr. Mallory: We did not examine the neck, but I have no doubt that they were. The glands throughout the body seemed to be involved.

Dr. Cabot: That is a point that might have been found in life of course. They might have got one of the neck glands out and known about the rest in that way. But he was here only three days.

What was the nature of the lymphoma?

Dr. Mallory: A tumor composed exclusively of round cells of the lymphoblastic series, that is, not a Hodgkin's type. It is the kind that one most frequently finds in lymphoma of the intestinal tract.

A Student: Is this the type that is sometimes limited to the thoracic cavity.

Dr. Mallory: You could get it in the bronchial glands of the thymus perfectly well.

A Studant: Was there enough in the stomach to interfere with its function?

Dr. Mallory: That is quite hard to say. The infiltration was relatively diffuse and I imagine it probably interfered relatively little. The other tumors seemed in size at least much more significant particularly the one in the ileum, but I think it is quite definitely characteristic of lymphoma of the intestinal tract that it does interfere with function less than any other tumor. I remember one case which I saw at the City Hospital some years ago where fifteen feet of small intestine were diffusely infiltrated to the size and thickness of an ordinary rubber garden hose. The man came in with an eighteen hour history that led to the clinical diagnosis of acute appendicitis, yet the process must have been going on for weeks and with almost no disturbance of intestinal function whatever.

A Student: Can you think of any reason why that strangulation had formed and taken place just at the end and not sixteen years ago?

Dr. Mallory: No; that is usually the story of any hernia, that it exists years before strangulation occurs.

A Student: Did the lymphoma in any way cause his death?

Dr. Mallorly: I have no idea.

Dr. Cabot: I think we have to say yes, because he has been having nausea for two and a half months. He got in an emaciated condition and therefore was not prepared to bear a strangulation. There is a possibility that the hernia might have occurred under any circumstances, but the fact that he was in such poor shape prevented them from doing anything surgically, which they conceivably might done otherwise.

SILVER SUTURE

J. G. HOLMES, M. D.
Alamogordo, N. M.

(Read before the twentieth annual meeting of the Pecos Valley Medical Association, held at Roswell, N. M., Oct. 10, 1929.)

Wires of the various metals were among the first sutures used in surgery, especially in bone work. This was because of their strength, pliability, the ease with which they could be sterilized and inhibitory action on the growth of bacteria. The list includes silver, copper, brass, bronze, gold, tin, aluminum, platinum, iron and nickel. Gold, platinum, aluminum and nickel are only slightly inhibitory to bacteria, so are not as suitable as others. Copper has the most inhibitory action on bacteria. Iron is easily oxidized in the tissues. Silver wire is the most suitable in most cases. Any metal, if buried in the tissues, might act as a foreign body and lead to a sinus formation.

REPORT OF CASE

D. C. W. was employed in the railroad shops as machinist helper. His previous history was negative. He was physically well developed and in good health.

On August 22, 1906, when he was about 18 years of age, he was working at a drill when his glove and jumper caught in the machinery. He received a compound comminuted fracture of the left radius in the lower third, besides a dislocation of the left shoulder and other body bruises, and was sent to the hospital, where he remained about six months. Four operations were necessary before he was finally released. About a month after his injury, silver wire was used, to hold the broken pieces of bone, by Dr. G. C. Bryan of Alamogordo, who was railroad surgeon and attended the patient.

Examination of the arm shows that he now has a firm union of the bones, but with some deformity at the wrist. There is about three-fourths of the usual wrist motion. A good grip in the hand. Free motion of the fingers when the palm is down. Some stiffness in the first, second and third fingers when palm is up. There is some shortening of the distal end of the radius, due to improper development.

At times there are tender spots over the lower end of the radius and on several occasions pieces of wire have worked to the surface and been removed. The longest piece was about one and three-fourths inches in length. A piece can now be felt under the skin, but it does not trouble him.

The results were very good as to the use of the arm. The patient states that his left arm is as good as the other one and does not bother him in his work. After his recovery

he completed his apprenticeship as machinist and as boiler maker and has worked with horses and cattle on a ranch.

An x-ray picture taken sixteen years, and another twenty-three years, after the accident shows some interesting facts regarding the action of the silver sutures used in the wound. One loop of the large wire remains intact in the bone about three inches from the wrist joint. Another appears to have broken into several pieces near the wrist, seven of them showing in the picture. The twisted knot is now in the soft tissues in the palmar surface of the wrist. Two short pieces are in the palmar area half-way between the wrist and fingers, and one piece in the back of the wrist.

A finer wire was also used near the wrist and it has been broken into small bits, even to one-fourth inch in length. These remain in the soft tissues of the radial side of the forearm. As silver is not easily oxidized or absorbed, it is presumed that the wires remain embedded in the tissues at this time.

Comparisons of the pictures taken at the different times shows a few changes in the relative positions of the pieces of wire, due, no doubt, to the action of the muscles when in use.

ARIZONA STATE MEDICAL ASSOCIATION. MINUTES OF THIRTY-EIGHTH ANNUAL SESSION

Prescott, Ariz., April 18 to 20, 1929.

COUNCIL MEETING

The first meeting of the Council was held at the Hassayampa Hotel, at 8:30 p. m., April 17th. Dr. A. C. Carlson, president, presided. There were present, Drs. A. C. Carlson (president), Samuel H. Watson (president-elect), H. D. Ketcherside (vice-president), D. F. Harbridge (secretary), C. E. Yount (treasurer), W. C. Todt (councilor northern district), John E. Bacon (chairman Medical Defense Committee.)

Minutes of previous council meetings were read and approved.

Dr. W. C. Todt, councilor for the northern district reported that they had a very successful council district meeting at Flagstaff.

The treasurer read his annual report as follows:

TO THE COUNCIL AND HOUSE OF DELEGATES, ARIZONA STATE MEDICAL ASSOCIATION.

GENTLEMEN: I present herewith Treasurer's re- cil, which were: $250.00 hiring of publicity man; and pub- pro rated $6.00 for medical defense and $6.50 for scription of $2.00. This was seconded by Dr. Todt, Flanagan, after being inquired into by the attorneys Yuma County, Sharpenstein vs. Doctor R. R. Knotts, have been permitted by fortuitous circumstances to accumulate a small surplus amounting to about lars. The Sharpenstein-Knotts case in Yuma Coun-

JOHN E. BACON,

GENERAL STATEMENT

Total Receipts, all sources:		
Balance General Fund April 12, 1928	$ 1,148.69	
Dues 1929, 248 members at $10.00	2,480.00	
Refund from Secretary of State	5.50	
Savings Fund	2,069.82	
Defense Fund	4,811.41	
United States Bonds	10,000.00	
Total Receipts all funds	$ 20,515.42	
Total Disbursements all funds	7,329.08	
Total balance all funds		$ 13,186.34

ANALYSIS AND STATEMENT BY FUNDS

(1) **General Fund:**

Receipts:

Balance from 1928	$ 1,148.69	
248 members pro rated at $4.00 General Fund	992.00	
248 members pro rated at $6.00 Defense Fund	1,488.00	
Refund from Secretary of State	5.50	
November 19, 1928, Borrowed from Defense Fund	500.00	
Total receipts General Fund		$ 4,134.19

Disbursements Duly Authorized—paid from General Fund

A. C. Taylor Printing Co.	$ 30.00	
W. W. Watkins, reporting and cost light filter	145.00	
Southwestern Medicine, 245 members	490.00	
Martindell, Horne & Co., Treasurer's bond	30.00	
Sloan, Holton, McKesson & Scott, Medical Defense	8.35	
Sloan, Holton, McKesson & Scott, Medical Defense	55.00	
Sloan, Holton, McKesson & Scott, Medical Defense	100.00	
Sloan, Holton, McKesson & Scott, Medical Defense	50.00	
Sloan, Holton, McKesson & Scott, Medical Defense	185.00	
Sloan, Holton, McKesson & Scott, Medical Defense	336.38	
Secretary of State	96.75	
Peterson, Brooke & Steiner, file	20.00	
Bank of Arizona, Safety Deposit Box	4.00	
W. D. O'Neil Co.	13.10	
D. F. Harbridge, office expense	60.00	
Louise Pearson, reporting discussions, nine meetings at $15.00	135.00	
Publicity campaign	250.00	
A. C. Taylor Printing Co.	60.62	
Donofrio Floral Co.	10.00	
Ackers Book Store, floral	15.00	
A. C. Taylor Printing Co.	3.25	
D. F. Harbridge, office expense	60.00	
Arizona Seed and Floral Co.	15.00	
John W. Flinn, reimburse for letterheads	8.50	
R. J. Stroud, telegrams	3.60	
W. D. O'Neil Co.	4.60	
A. C. Taylor Printing Co.	24.00	
St. Louis Button Co., badges	29.10	$ 2,242.25
Balance in Bank of Arizona, General Fund April 13, 1929, $1,921.04		
Less check outstanding 29.10		$ 1,891.94

(2) **Defense Funds**

Receipts:

(a) Savings Fund:			
Balance April 12, 1928	$1,925.03		
Interest - coupons	106.29		
Interest June 30, 1928	38.50	$2,069.82	
(b) Defense Fund:			
Balance April 12, 1928	$4,502.60		
Interest June 30, 1928	75.15		
Coupons - bonds, December 22, 1928	212.44		
Interest, December 31, 1928	21.20	4,811.41	
Total receipts Defense Funds			$6,881.23

Expenditures:

(a) All of Savings Fund applied to purchase of bonds	$2,069.82	
(b) From Defense Fund - purchase of bonds	3,017.01	
Loan to General Fund	500.00	
Total expenditures Defense Funds		$5,586.83
Balance Yavapai County Savings Bank, Defense Fund, Apr. 13-'29		$1,294.40

Clearings:

In General Fund—for Medical Defense 240 members at $6.00	$1,488.00	
Borrowed from Defense Fund	500.00	$1,988.00
Medical Defense paid out of General Fund	738.73	
Due Medical Defense Fund, now carried in General Fund		$1,249.27

NOTE: Balance in General Fund	$1,897.94	
Due Defense Fund	1,249.27	
True balance General Fund	$ 648.67	

Itemized Statement of Medical Defense expense:

Sloan, Holton, McKesson & Scott, May 16/28	$ 8.35		
Nov. 19/28	55.00		
Jan. 17/29	100.00		
Mar. 16/29	50.00		
Mar. 23/19	185.00		
Apr. 9/29	336.38		
	$ 734.73		
Rent Safety Deposit Box	4.00		
Purchase of Bonds July 3, 1928	5,086.83	$5,825.56	

Total Amount Available for Medical Defense:

Cash in Defense Fund	$ 1,294.40	
Due from General Fund	1,249.27	
United States Bonds First Liberty Loan Converted 4¼%	10,000.00	$12,543.67

EARNINGS OF DEFENSE FUNDS AND BONDS, Since 1928 Report:

Bonds,—Coupons June 15, 1928	$106.29	
Coupons, Dece. 15, 1928	212.44	
Savings Fund, Interest June 20, 1928	38.50	
Defense Fund, Interest June 30, 1928	75.17	
Interest Dec. 31, 1928	21.20	$453.60

NOTE: On November 19, 1928; it was necessary to meet overdrafts on our General Fund; to transfer $500.00, which was drawing interest at 4%, from our Defense Fund. These overdrafts were due to expenditures authorized by the Council, which were: $250.00 hireing of publicity man; and publicity cost of argument by Secretary of State $91.25; making a total of $341.25, which had not been budgeted.

UNPAID EXPENSE FOR 1929:

To Southwestern Medicine—248 members at $2.00	$496.00	
To Secretary for office expense	120.00	
Stenographer annual meeting	125.00	
Expenses John Alexander	250.00	$991.00

(Excluding any Medical Defense items which may arise before 1930.)

RECOMMENDATIONS:

1. Inasmuch as the Treasurer was embarrassed several times during the year, it is suggested that this Council, which is the Executive Committee of the Association, keep in close touch with the financial condition of the Association.
2. In view of the increased cost of running the Association, your Treasurer recommends that the dues be pro rated $5.00 for the Association and $5.00 for Medical Defense, effective for the fiscal year 1929.

Respectfully submitted,
C. E. YOUNT,
Treasurer.

We, the undersigned, a committee duly appointed by President A. C. Carlson, have audited the books of the Treasurer and inspected the Bonds in his custory, and find them correct.

C. R. K. SWETNAM
H. T. SOUTHWORTH

There was a general discussion of the finances of the Association. Dr. Ketcherside moved that the council recommend to the House of Delegates that the per capita assessment for membership in the Association be raised from $10.00 to $12.50, to be pro rated $6.00 for medical defense and $6.50 for the general fund, which includes the journal subscription of $2.00. This was seconded by Dr. Todt, and carried.

Dr. Bacon presented the report of the Medical Defense Committee, as follows:

REPORT OF THE COMMITTEE ON MEDICAL DEFENSE

ARIZONA STATE MEDICAL ASSOCIATION:

Your Committee on Medical Defense has taken official cognizance of four separate cases during the last year. The case of Melick, Roundtree and Flanagan, after being inquired into by the attorneys for the Committee was settled out of court by Doctor Roundtree who is not a member of the State Association and is, therefore, entitled to settle out of court if he desired to do so.

There is a case filed against Doctors Perkins, Gungle and Langham of Morenci. This case had a preliminary hearing, but the date of trial has not yet been set. The attorney of the association is of the opinion that the case will be non-suited.

The case against Doctor R. L. Looney et al at Prescott also non-suited at the initial proceedings.

There is pending against Doctor R. R. Knotts in Yuma County, Sharpenstein vs. Doctor R. R. Knotts-This case is now being given a great deal of attention by your Committee, and the attorneys for the association as the circumstances are particularly difficult in this case owing to local quarrels and prejudices that exist between medical men in that county. The case should be non-suited and never reach a jury on its merits, but owing to the conditions if it does reach a jury the prospects of a verdict against Doctor Knotts are very good. This case if it comes to a trial will probably be quite expensive.

The Committee's financial status is as follows:

Balance in Savings Bank April 13, 1929		$ 1,294.40	
Loaned to General Fund		500.00	
Dues from 248 members pro rated at $6.00		1,488.00	
Plus $10,000 U.S. Bonds, 1st Liberty Loan Converted		10,000.00	$13,282.40
Expense:			
Medical Defense, Legal	734.73		
Purchase of bonds	86.83		
Rent Safety Deposit Box	4.00		825.58
Balance available for Medical Defense			$12,456.84

Your Committee has heard gossip that some of the members of the Association believe that the amount of the assessment assigned to medical defense is excessive and should be reduced. There have also been rumors that some of the members of the Association believe that the medical defense fund might be drawn upon for other purposes. Your Committee desires to go on record at this time as being emphatically opposed to a reduction of the fee, and just as emphatically against the diversions of any of the medical defense fund for any other purposes whatsoever. The fact that we have been fortunate in the administration of this fund and have been permitted by fortuitous circumstances to accumulate a small surplus amounting to about ten thousand dollars does not alter the fact that two or three bitterly contested suits would wipe out this fund entirely. It may also be recalled that one of the suits which we defended in the recent past cost the fund in the neighborhood of four thousand dollars. The Sharpenstein-Knotts case in Yuma County may well run to near that amount, and there is no telling when a crop of these law suits may occur, and if your Committee is found with a depleted fund the barrier of defense which has been set up against unscrupulous lawyers and their clients will fall down and our profession will needlessly suffer thereby.

JOHN E. BACON,
Chairman
R. D. KENNEDY,
Member
D. F. HARBRIDGE,
Secretary.

Dr. Harbridge presented the report of the Secretary, as follows:

SECRETARY'S ANNUAL REPORT, APRIL, 1929

The usual routine business of the office has been carried on. A large amount of correspondence passed through the office, listing memberships and transmitting to the American Medical Association legislation information and considerable correspondence with the American Medical Association relative to Hospitals, nurses, Sanatoriums and Laboratories; consumed its quota of time and effort.

Membership in good standing, 232 (two honorary).

Dues received		$2,300.00
Expenses for which vouchers were signed.		
General expense	$2,493.52	
Medical Defense	734.73	
		$2,228.25
		$ 1.75

This shows a rather severe drain on our finances, leaving a balance of $1.75 from the total receipts to date. All indications point to a considerable expense this coming year by the Medical Defense.

Respectfully submitted,
DELAMERE F. HARBRIDGE, M. D.

Dr. Todt moved that payment of $125.00 for stenographer for this annual meeting be authorized. Seconded by Dr. Watson and carried.

Dr. Harbridge reported that Mr. Holton, of the Association's firm of solictiors, had expressed his willingness to collect information about medical defense to be published in the journal of the Association. for the education of our members. Dr. Bacon moved that this matter be referred to the Medical Defense Committee, insofar as publication is concerned.

Council meeting adjourned.

HOUSE OF DELEGATES

First session of the House of Delegates convened at 5 p.m., April 18, at St. Michael's Hotel, Prescott, with the following members present: President Samuel H. Watson, presiding; secretary, D. F. Harbridge. Cochise county, Drs. Durfee, Ferguson and Bledsoe; Coconino county, Dr. Manning; Graham county, Dr. Squibb; Gila county, Drs. Bacon and Kennedy; Maricopa county, Drs. Goss, Franklin, Greer, Clohessy, Wylie, Bailey, Stroud, E. Payne Palmer and Watkins; Navajo-Apache county, Dr. Wilson; Pima county, Dr. Davis; Yuma county, Drs. Reese and Ketcherside; Mohave county, Dr. Todt; Yavapai county, Drs. Taylor and Yount.

Minutes of the last annual session were read and approved.

In view of the fact that it is difficult to obtain a quorum for the first meeting of the House of Delegates, Dr. Stroud moved that for this first meeting, ten members constitute a quorum, instead of fifteen, at which meeting only reports of committees, reading of the minutes and official installation of the new president take place. Seconded by Dr. E. P. Palmer and, after discussion, carried.

The secretary reported the action and recommendations of the Council at their meeting on the previous evening. Dr. Palmer moved that their actions and recommendations be approved by the House of Delegates. Seconded by Dr. Kennedy and carried.

The secretary read the report of the Medical Defense Committee (see minutes of Council meeting).

Dr. Stroud read a report of the Legislative Committee, concerning the deduction from income tax of travelling expenses to medical meetings. He stated that such expenses are now deductible from income tax, retroactive to 1922. The report is as follows:

During the session in the spring of 1928 an effort was made in Congress by an amendment introduced by Senator Robinson, of Indiana, to allow physicians to deduct their traveling expenses to and from Medical Meetings. This was claimed to be a just measure because all other trades and professions were allowed these deductions.

This bill passed the House some time in 1927, but the Chairman of the Senate Committee on Finance, in view of the attitude of the Department of Internal Revenue, was not disposed to favorably recommend such an amendment.

I was in communication with our legislators at Washington and have a letter signed by A. W. Mellon, Secretary of the Treasury, to the Honorable Lewis W. Douglas, of the House of Representatives, in which he takes up this question. It would seem from Mr. Mellon's explanation that the attitude of Congress and the Secretary of the Treasury was that if physicians were granted this relief, other professions such as lawyers, engineers and architects would petition Congress for similar relief.

Senator Copeland attempted to propose an amendment to the bill in which he tried to overcome the objection and attempted to insert after the word "Trade" the word "Profession," and attempted to insert after the word "Business" "Or in attending meetings of trades, professional or business organizations of which the taxpayer is a member."

These two substitutions would have overcome the difficulty, but the amendment lost.

I will read you my letter to Congressman Lewis Douglas in which I called attention to a telegram of Senator Cary Hayden which seemed to be very favorable to us, but again Mr. Mellon's opinion overcame our objections—my letter was as follows:

To the Honorable Lewis Douglas,
United States Congressman,
Washington, D. C.
My Dear Mr. Douglas:

I have just had a telegram from Senator Carl Hayden saying that the Senate adopted overwhelmingly the bill permitting of the deduction of traveling expenses to a physician while in attendance at "Medical Meetings.'

Each of us in the Arizona Medical Society is interested in the passing of the bill which is a legal and logical thing, as we seek new sources of information in an intensive way which makes us better servants of the public.

I know from your interest that you are behind us and I personally wish you would use your good offices to enlighten other members of the justice of the issue.

With best personal regards, I am,
Very truly yours,
R. J. STROUD, Chairman,
Committee on National Legislation,
Arizona State Medical Association.

Both of our Senators believed we were right in our contention and on May 28th, 1928, I received the following letter from Congressman Douglas:

Washington, D. C.
May 28, 1928.

Dr. R. J. Stroud, Chairman,
Committee on National Legislation,
Arizona State Medical Ass'n.,
Phoenix, Arizona.
My dear Dr. Stroud:

Replying to your letter of May 19, I regret to advise that the conference struck out the deduction of traveling expenses to physicians while in attendance at Medical Meetings, and the House agreed to the conferees report in that form.

Regretting that I am compelled to send you this unfavorable report, I am, with best wishes,
Yours very sincerely,
L. W. DOUGLAS.

On May 3rd I received a telegram from Congressman Douglas in which he stated also that the narcotic tax would not be decreased. I presume by this that he meant our contention that one dollar was fee enough to pay after we had successfully reduced it from three dollars, and Congress was attempting to re-establish the three dollar fee.

Our Senators were against the increase of the existing license fee of one dollar under the Harrison Narcotic Act, and we were successful in combating the increase. The Senate, on May 15th, voted to reject the recommendation of the Committee to increase.

It is, however, a pleasure for me to be able to say to you that at the present time one of our brother doctors has taken up this question thru the Courts and has successfully beaten the Treasury

Ruling by carrying to the Board of Tax Appeals the fact that he had deducted his traveling expenses from his income tax, and would not pay the tax against this amount. The ruling of the Board of Tax Appeals is to the effect that physicians are now allowed to deduct traveling expenses to and from meetings, as well as their expenses for room and board, provided that they obtain receipts and keep them in order to be able to show such expenditures to the Internal Revenue Officers when they claim such deduction.

There are no other bills before Congress which particularly affect the profession at the present time.

R. J. STROUD, Chairman,
National Legislation Arizona State
Medical Association.

Dr. Palmer moved that the report be accepted; seconded by Dr. Franklin, and carried.

Dr. Palmer announced the formation of an Arizona Cancer Committee, and moved that the retiring president be, for the year following his retirement from that office, a member of this committee. Seconded by Dr. Kennedy, and carried.

Meeting adjourned to the following day.

Open meeting of the House of Delegates was convened at 3:30 p.m., on April 19th, with president, Samuel H. Watson in the chair. Present: Drs. Durfee and Ferguson (Cochise); Dr. Manning (Coconino); Dr. Squibb (Graham); Drs. Bacon and Kennedy (Gila); Stroud, Goss, McIntyre, Palmer, Greer, Franklin, Wylie, Sweek, Bailey, Watkins and Harbridge (Maricopa); Dr. Wilson (Apache-Navajo); Drs. Hoffman, Davis and Littlefield (Pima). Dr. Taylor (Yavapai); Drs. Ketcherside and Reese (Yuma); Dr. Todt (Mohave).

Dr. Greer read the report of the Committee on Necrology, as follows:

To the President, Arizona State Medical Association:

Your Committee on Necrology submits the following report:

Whereas death has removed from the ranks of the Medical Profession of Arizona,

Dr. Joel I. Butler,
Dr. Charles A. Peterson,
Dr. Charles S. Vivian,
Dr. Henry H. Stone,
Dr. John Bryan McNally,
Dr. Henry A. Hughes;

And Whereas, these physicians were prominent in the activities of our State Medical Association;

And Whereas, by their kindly nature, courteous manner and high professional attainments, they won the admiration, respect and friendship of their professional confreres throughout their state;

Therefore be it resolved, that in their death this Association has lost active and useful members, and the State of Arizona loyal and public-spirited citizens;

And Be It Further Resolved, that this resolution be made a part of the permanent record of the Arizona State Medical Association.

C. E. YOUNT, M.D.
I. E. HUFFMAN, M.D.
J. M. GREER, M.D.
Committee.

April 19, 1929.

It was moved and seconded that this report be accepted as read; carried.

Dr. Watkins mentioned the need of the Association for a good stereopticon lantern and screen, and moved that the Association purchase a lantern and place it each year in the custody of the county society who was due to entertain the Association at the next annual meeting. Such entertaining society could thus have the use of the lantern and could see that it was ready for use at the annual meeting. He thought the cost would be somewhere in the neighborhood of $100.00, and could be purchased some time before the next annual meeting. Motion was seconded by Dr. Bacon, and carried.

The following officers were nominated and duly elected:

Delegate to the American Medical Association, Dr. R. D. Kennedy of Globe.

Alternate delegate to the American Medical Association, Dr. Orville H. Brown, Phoenix.

President-Elect, Dr. J. Madison Greer, of Phoenix.

Vice President, Dr. Harry A. Reese, Yuma.

Secretary, Dr. D. F. Harbridge, Phoenix.

Treasurer, Dr. C. E. Yount, Prescott.

Councilor Central District, Dr. W. Warner Watkins, Phoenix.

Member Medical Defense Committee, Dr. John E. Bacon, Miami.

Dr. Bacon read the following letter from Mr. Holton, of the firm of Sloan, Holton, McKesson and Scott, the Association's solicitors:

"I find that it will be impossible to attend the coming meeting of the Arizona State Medical Association and to address them, as I had intended, upon the subject of "Medical Defense and the Situation in Arizona." I desire, however, to make a report to the Association on the litigation now pending and that which has been disposed of during the past year and to intersperse some remarks upon the subject of medical defense.

During the past year, three suits have been instituted affecting members of this Association, namely: Chris Christiansen vs. Dr. R. N. Looney and Dr. J. H. Allen, et al, in the Superior Court of Yavapai county; James Mammon vs. Dr. C. H. Laughran, Dr. W. R. Quinn and Dr. E. J. Gungle in the Superior Court of Greenlee County and C. C. Sharpenstein vs. Dr. R. R. Knotts in the Superior Court of Yuma county, Arizona. Of these suits, the latter two are still pending. The case of Christiansen vs. Drs. Looney and Allen, has been tried and resulted in a verdict for the defendant doctors. This suit was a particularly vicious one inasmuch as there was an attempt to recover damages for what the complaint denominated "conspiracy to injure plaintiff by an unwarranted finding of insanity" by the two doctors named who were acting under the statute and under the appointment of the court as a lunacy board or commission. Under the law, the finding of such board is in the nature of a judicial determination of the question of sanity, which the court held could not be attacked on the ground of improper motives on the part of the board. In addition to this fact, there was a total want of evidence of any conspiracy on the part of any of the defendants. The case was one palpably unjustified upon any ground, but it illustrates that the mere fact that a physician has done nothing to justify a suit for damages against him, nevertheless, such suits may be brought with the attendant expenses necessary to a proper defense. Unfortunately, in most instances, plaintiffs which bring such suits are unable to respond to a judgment for costs, and it is also an unfortunate fact that in such suits costs of attorney fees may not be taxed against the plaintiff. The doctor is hailed into court on a groundless charge and his only redress is to employ counsel and protect himself against a judgment. In many of these suits in order to properly defend the same involves an expenditure of considerable sums of money. No physician or surgeon, no matter how skillful or careful, and no matter how complete his education and training, is exempt from the danger of such unwarranted attack.

The other two suits above mentioned are still pending. The suit filed against Drs. Laughran,

Quinn and Gungle in Greenlee county is on charges that the operation was performed without the consent of the parents. The complaint charged, in general terms, negligence on the part of the physician but in the face of motions to compel them to state specifically the acts of negligence and how such acts departed from the established medical practice, counsel for plaintiff was compelled to amend his complaint so that as the complaint now stands practically the sole charge against the physician is that the operation was performed without the consent of the parents and that no emergency existed. As to the question of the existence of an emergency, in such cases plaintiff will be compelled by competent evidence, that is to say, by the evidence of a skilled physician, to describe the deceased's physical condition at the time and that such operation, which by the way was the removal of the appendix, was unnecessary and that no emergency existed. Not only is that true, but the proof will show that the parents of the child not only acquiesced in and requested the operation but were present at the hospital at the time of the operation. I am reliably informed that it will be utterly impossible for the plaintiff to establish the fact affirmatively by competent proof that no emergency existed. This is another clear example of a groundless suit brought against competent and ethical physicians probably upon the hope that some settlement might be made rather than spend the money necessary for defense. I might say that the most cogent deterring influence against the bringing of this harrassing litigation is the fact that none of these suits where the Medical Association has been involved have resulted in any pecuniary advantage whatever to any of the parties plaintiff. Not only is it true, but in so far as my knowledge of the history of the Arizona State Medical Association is concerned, there has never been a judgment against any of its members on a malpractice case, nor has any member of the Association been mulcted in damages by the payment of any sum of money in compromise of such litigation. There is a question in my mind which would have the worst influence, a judgment in favor of the plaintiff at the end of two or three years of litigation, or compromise. I am inclined to believe that if it became a matter of common knowledge that these suits could be brought and a compromise effected that it would lend more encouragement to such litigants than any other one thing that could happen. The attitude that the Association has heretofore taken through its counsel that we have thousands of dollars for defense but not one cent for tribute has become pretty well disseminated among those attorneys in the state of Arizona who indulge in this sort of litigation, and personally I feel that this attitude should be consistently maintained. Not only should that be said of the Association, but it should be absolutely true of the Association that it has thousands of dollars for defense and that it never compromises a case.

The remaining case above mentioned, that of Sharpenstein vs. Dr. Knotts in the Superior Court of Yuma County now pending, is perhaps one of the most troublesome that has been brought in recent years, not because, so far as my investigation goes, it is true that the physician has been guilty of any deviation from established medical practice but because there appears to be something of a feud between certain physicians including the defendant in this case, by reason of which it is possible that the plaintiff might be able to obtain local medical testimony in support of his allegations of negligence contained in his complaint. The injury to the plaintiff in that case was the fracture of the femur bone. I feel justified in stating that the reduction of that fracture by the defendant doctor conformed in every detail to the best practice. However, before a complete union had occurred, rather perhaps before the plaintiff had completely recovered, through outside influence the plaintiff was removed from the hospital of the defendant doctor, a distance of five miles, to another hospital where a different course of treatment involving an operation was had. This case is set for trial on the 29th of this month. The situation involved in this case brings me to the discussion of what is obviously the most important legal fact in the defense of malpractice cases. Doubtless all of the members of the Association are familiar with these facts, but it may not be amiss to bring them again to their attention with emphasis upon their importance. Malpractice cases are founded upon contract which the law implies, namely, that a physician is possessed of that degree of learning and skill possessed by the ordinary physician and surgeon practicing in the communities in which he is located and in similar communities and that he will apply such skill and learning with a reasonable degree of care. In order that the plaintiff may recover against a physician he must allege and prove either that the physician was not possessed of that skill which the law requires, or that being possessed of that skill which the law requires, or that being possessed of such skill he was careless and negligent in the performance of his duties. The latter situation involves what is termed by law a "tort" and most malpractice cases are tort actions, that is to say, are actions based upon negligence of the physician or unskilled acts of the physician. As to the question of the possession by the physician of that degree of skill and learning which the law requires, the function of the Medical Association is, of course, to see that no physician is admitted to its membership who does not possess the necessary skill and learning, and the members of the Association should see to it that whenever the charge of lack of skill and learning is brought against any of its members that it shall be in a position to overwhelm the court and jury with evidence of the fundamental quailfications of any member so attacked. As to the charge against a physician that he has been negligent or unskillful in the actual performance of his duties such charge in almost every instance involves a strictly medical question and requires proof by medical witnesses—witnesses who belong to the School of Medicine of the physician so charged—witnesses who can qualify as being engaged in the practice of such school of medicine in the same community with the defendant, or in a similar community, who will testify affirmatively that the act so charged to be negligent or unskillful was in fact negligent or unskillful and that he has violated or departed from the established medical practice in such cases. There are a few isolated examples of such charges which may be proven by lay testimony but these are of unusual occurrence. As a general rule, the lack of such testimony on the part of the plaintiff is fatal to his recovery, and the very vital and important feature of that fact is that the burden of presenting that sort of testimony is upon the plaintiff and unless that burden is borne by the plaintiff and such testimony produced, it is the duty of the court at the close of the plaintiff's case to decide the matter himself, dismiss the jury and render a verdict for the defendant. This fact is the greatest instrument of defense in the hands of a physician. It shields him against the greatest hazard which he faces, namely, the passing upon the facts by a jury. I need not dwell upon the fact that the tendency of juries is to be swayed by sympathy and prejudice and the communistic principle that some one having suffered, some one should com-

pensate is too often unconsciously, perhaps the motivating force impelling their verdicts. It, therefore, is important that the members of the Association should always bear in mind that in almost all of these cases unless there is medical testimony of negligence or want of skill afforded the plaintiff, he cannot recover. Some physician must furnish the plaintiff with ammunition. It is important that the Association make sure that those jealousies and bickerings which are common to physicians, as well as to all of humanity, particularly, as I suppose in smaller localities, should not be carried to the extent that one physician through such motives should be so foolish and short-sighted as to testify against another and thus furnish the evidence necessary to a verdict which would set a precedent of immeasurable damage to the profession. It is needless to say that this does not mean that a physician called or regularly subpoenaed to give his testimony in a case should not testify to the truth and nothing but the truth so far as he knows, but there is a vast difference between that sort of thing and conniving and colluding with the plaintiff to bring about such a judgment. No groundless malpractice case can result in a verdict for the plaintiff without the collusion and connivance of some local physician. This is the thing that the Association must eradicate. The passage of the Workmen's Compensation Law has eliminated at least fifty per cent of what is commonly called "ambulance chasing" cases which are directly akin to malpractice cases and those in the legal profession and out of it who are dependent upon that class of litigation for their livelihood are none too prosperous, and the fact of the filing of three malpractice cases within the state during the past year points in my jurgment to the fact that any encouragement given to this class of litigation by the obtaining of judgments and settlements in these cases would result in an epidemic of such litigation. In almost every instance, the plaintiff demands excessive damages running into many thousands of dollars and the juries in this state as a general rule seem to have little conception of the sacrifice and toil necessary to the getting together of a competence or a "nest egg" for old age, and when the matter is left in their hands, my observation is that it is their inclination to be liberal in the extreme to one appearing before them in a pitiably physical condition, whether such condition be actual or assumed. The harder a physician has worked and the more he has been able to accumulate through such effort and sacrifice, the greater the hazard of such litigation. The best protection the physicians of this state can have is an efficient medical defense organization, amply financed, presenting a solid front and practicing eternal vigilance.

In closing, I desire to say that there are still pending in this state three cases; the case discussed pending in Greenlee county, that of Mammon vs. Drs. Laughran, Quinn and Gungle; Sharpenstein vs. Dr. Knotts and the case of Waugh vs. Dr. L. S. Campbell, both pending in Yuma county. The latter case has been pending for two or three years and unless pressed within a short time will be subject to dismissal for want of prosecution. The case of Flanigan vs. Dr. Rounseville and Dr. Melick in Yavapai County has been dismissed with prejudice. Dr. Rounseville who is not a member of this Association insisted upon the payment of a small amount to the plaintiff. Dr. Melick who is a member of the Association, at my advice absolutely refused to participate to any extent whatever in such settlement and insisted that if Dr. Rounseville make such a settlement that the case be dismissed as to him with prejudice. That case alleged x-ray burns."

Dr. Stroud, on behalf of the Maricopa County Medical Society, invited the Association to hold the 1930 session in Phoenix. Motion was made and carried that this invitation be accepted.

Dr. H. T. Bailey moved that the Association extend to the Yavapai County Medical Society a vote of thanks for the entertainment provided at this meeting. Motion carried.

Dr. Watkins moved that the House of Delegates approve whomever the president appoints to serve on the Committee on Public Welfare, and that this committee be requested to report to the next meeting of the House of Delegates on the matter of the Medical Practice Act. Seconded and carried.

House of Delegates adjourned sine die.

SCIENTIFIC SESSIONS

The first open Scientific Session was convened at the St. Michael Hotel at nine a.m., April 18th, with Dr. A. C. Carlson, president, in the chair. Invocation was given by Rev. Alfred W. Nichols, of Prescott. Addresses of Welcome were given by the Hon. F. C. Seale, Mayor, on behalf of the city of Prescott; Dr. W. E. McWhirt, of the staff of U. S. Veterans Hospital No. 50, on behalf of the medical staff of that institution; and by Dr. John W. Flinn, president of the Yavapai County Medical Society, on behalf of the entertaining society. The reply to the addresses of welcome was made by Dr. H. T. Bailey, vice-president of the Association.

The president-elect, Dr. Samuel H. Watson, of Tucson, was then introduced by the retiring president, Dr. A. C. Carlson. Dr. Watson assumed the chair and office of presidency.

The first paper was by Dr. John J. McLoone, of Phoenix, on "Otitis Media in Infants and Young Children." It was discussed by Dr. H. T. Bailey, of Phoenix.

The next paper was by Dr. James H. Allen, of Prescott on "The Treatment of Pneumonia." It was freely discussed by Drs. S. C. Davis of Tucson, H. K. Wilson of Holbrook, H. D. Ketcherside of Yuma, Robert Franklin of Glendale, W. C. Todt of Kingman, W. W. Wilkinson of Phoenix, John W. Flinn of Prescott, Frank J. Milloy of Phoenix, John Alexander of Ann Arbor, Mich., and Donald J. Frick of Los Angeles.

Dr. W. G. Schultz of Tucson presented a paper on "Bladder Neck Obstruction" illustrated by lantern slides. It was discussed by Drs. Chas. N. Ploussard of Phoenix and C. C. Benedict of Whipple.

Dr. T. T. Clohessy of Phoenix read a paper on "Eczema and Eczematoid Ringworm." It was discussed by Drs. R. N. Looney of Prescott, Bayard Sullivan of Whipple, Donald J. Frick of Los Angeles and W. Warner Watkins of Phoenix.

At the afternoon session, which convened at 1:30 p. m., April 18th, the first paper was read by Dr. Howell Randolph of Phoenix, on "History Taking and Evaluation in the Various Chest Conditions."

The second paper was read by Dr. W. Warner Watkins of Phoenix, on "Fungus Infection With Special Reference to the Lungs."

The two papers were discussed by Drs. Samuel H. Watson of Tucson, I. D. Lewey of Whipple, H. T. Bailey of Phoenix, Bayard Sullivan of Whipple, C. E. Yount of Prescott, and E. Payne Palmer of Phoenix.

Dr. John Alexander, Professor of Surgery of the University of Michigan, Ann Arbor, Mich., gave the Address on Surgery, using as his subject, "The Empyema Problem."

Dr. John E. Bacon of Miami presented a paper on "The Treatment of Fractures."

Dr. Robert Ferguson of Bisbee read a paper on "Fractures of the Pelvis, Case Reports and X-rays."

The two papers on fractures were discussed by

Drs. H. T. Southworth of Prescott, R. D. Kennedy of Globe. J. M. Greer of Phoenix, E. Payne Palmer of Phoenix and W. Warner Watkins of Phoenix.

The scientific session adjourned at 5 p. m., for the executive meeting of the House of Delegates.

On Friday forenoon, April 19th, clinical and laboratory demonstrations were given at the U. S. Veterans' Hospital and at the Yavapai County Hospital, from 8 to 9:30 o'clock. These were well attended and and thoroughly enjoyed.

Scientific session convened at 10 a. m., April 19th, with Dr. S. H. Watson, president, in the chair.

Dr. Robert S. Flinn of Prescott read a paper on "The Treatment of Diabetes by the General Practitioner." This was discussed by Dr. W. Warner Watkins of Phoenix.

Dr. S. C. Davis of Tucson read a paper on "Modern Examination and Treatment of Patients with Chronic Bright's Disease."

Dr. J. B. Littlefield of Tucson read a paper on "Urinary Findings Simulating Nephritis."

These two paper were discussed by Drs. Frank J. Milloy of Phoenix, R. J. Stroud of Tempe, Robt. Ferguson of Bisbee. John E. Bacon of Miami, W. W. Wilkinson of Phoenix, Albert Soiland of Los Angeles and D. F. Harbridge of Phoenix.

Dr. Donald J. Frick of Los Angeles, at this time gave the annual Address on Medicine, using as his subject, "Heart Disease, the Necessity of Study and Prevention."

At the afternoon session, which convened at 2 p.m., the first paper was read by Dr. F. B. Sharp, of Phoenix, on "The Conduct of the Difficult Obstetrical Case." This paper was discussed by Drs. C. E. Yount of Prescott. J. K. Hazel of Jerome, and W. W. Wilkinson of Phoenix.

The next paper was an invitation one, presented by Drs. Albert Soiland and Egbert J. Bailey, of Los Angeles, on "The Importance of Radiation Therapy to the Practice of Medicine." It was discussed by Drs. W. W. Wilkinson of Phoenix and R. J. Stroud of Tempe.

Dr. E. Payne Palmer, of Phoenix, read a paper on "A Plea for the Very Early Diagnosis and Very Eearly Treatment of Cancer." It was discussed by Drs. Albert Soiland of Los Angeles and Egbert J. Bailey of Los Angeles.

General session adjourned at 3:30 p. m., for a general meeting of the House of Delegates (see above minutes.)

Following the adjournment of the House of Delegates, the Arizona Cancer Committee presented the Canti motion picture film, loaned by the American Society for the Study and Control of Cancer. This picture shows the cellular activity of normal and cancer tissues in vitro. It was presented at the Elks' Theater, with explanatory talk by Dr. E. Payne Palmer.

On Saturday morning, April 19th, clinical demonstrations and laboratory demonstrations were again held at the Mercy Hospital and Pamsetgaaf Sanatorium. Following these, members and guests took cars and went to Jerome, where they were served luncheon in the Club of the United Verde Mining Co. Following this luncheon, the general scientific sessions were resumed in the library of the Club.

Dr. H. T. Bailey of Phoenix read paper on "The Eye in Systemic Conditions." It was discussed by Dr. Chas. N. Ploussard of Phoenix, and Dr. C.R.K. Swetnam of Prescott.

Dr. Joseph M. Greer of Phoenix read paper on "The Surgical Knee." It was discussed by Drs. A. C. Carlson of Jerome and R. D. Kennedy of Globe.

Dr. Frank J. Milloy of Phoenix read paper on "The Differential Diagnosis of the Commoner Diseases of the Gastro-Intestinal Tract."

Dr. Frank J. Callander of Tucson read paper on "Functional Colitis."

These two papers were freely discussed by Drs. R. H. Thigpen of Jerome, Geo. W. Bassett of Whipple, Bayard Sullivan of Whipple, E. Payne Palmer of Phoenix, and H. T. Bailey of Phoenix.

The last paper of the scientific program was read by Dr. F. C. Jordan, of Phoenix, on "Cerebrospinal Fever, with Special Reference of the Present Epidemic." This was discussed by Drs. C. C. Hedberg of Jerome, Robert S. Flinn of Prescott, R. J. Stroud of Tempe, Chas. N. Ploussard of Phoenix, W. Warner Watkins of Phoenix, A. W. Matschke of Clemenceau, and Powers of Jerome.

Adjournment sine die.

ARIZONA STATE BOARD OF MEDICAL EXAMINERS

At the meeting of this Board in January, 1930, there were present. Dr. F. T. Wright, Douglas, President; Dr. H. P. Mills, Phoenix, Secretary; Dr. J. M. Greer, Phoenix; Dr. Oscar S. Brown, Winslow; Dr. H. L. Schornick, Mesa.

Seventeen applicants were granted licenses to practice medicine and surgery in Arizona, as follows:

DR. LEROY C. POTTER, of Salt Lake City; graduate of Univ. of Nebraska, 1923; licensed by reciprocity with Idaho.

DR. HERMAN C. BODEMER, of Globe, Ariz.; graduate of Univ. of Nebraska, 1923, licensed by reciprocity with Nebraska.

DR. REDFORD A. WILSON, Tucson, Ariz.; graduate of Vanderbilt Medical School, 1926; by reciprocity with Tennessee.

DR. HORACE G. WILSON, Gallup, N.M.; graduate of Univ. of Maryland, 1902; by reciprocity with New Mexico.

DR. GEORGE S. BLAKE, Tempe, Ariz.; graduate of Bellevue Hospital Med. Coll., 1892; by reciprocity with Indiana.

DR. JOHN McKIBBIN, Loma Linda, Calif.; graduate of Coll. of Medical Evangelists, 1928; reciprocity with National Board of Medical Exabiners.

DR. MARION P. FIROR, Ajo, Ariz.; graduate of Univ. of Penna., 1926; reciprocity with Maryland.

DR. WILLIAM R. LEVERTON, Tucson, Ariz.; graduate of St. Louis University, 1909; by reciprocity with Illinois. Dr. Leverton is with the Veterans' Bureau Hospital in Tucson.

DR. LEROY JONES, Phoenix, Ariz.; graduate of Baylor University, 1928; by examination. Dr. Jones is temporarily located in Phoenix, taking care of the practice of Dr. Charvoz, who has been ill for several months.

DR. LESLIE R. KOBER, Phoenix, Ariz.; graduate of Northwestern Univ., 1929; by examination. Dr. Kober is associated with Dr. Kim Bannister of Phoenix.

DR. DONALD J. HUNT, Fort Defiance, Ariz.; graduate of Northwestern Univ. 1927; by examination.

DR. JOSEPH P. McNALLY, Prescott, Ariz.; graduate of St. Louis University, 1929; by examination.

DR. JAMES L. SPIKES, Ajo, Ariz.; graduate of Univ. of Arkansas, 1928; by examination.

DR. HARRY BOYSEN, Castle Hot Springs, Ariz.; graduate of Univ. of Iowa, 1928; by examination.

DR. COOK P. GREGG, Tucson, Ariz.; graduate of Barnes Med. College, 1900; reciprocity with Missouri.

DR. JULIUS H. WOODWARD, Ruby, Ariz.; graduate of Washington Univ., 1925; by reciprocity with Missouri.

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THE ARIZONA STATE MEDICAL ASSOCIATION MEETING IN PHOENIX

The Thirty-Ninth Annual Session of the Arizona State Medical Association will be held in Phoenix, on April 17, 18 and 19. Dr. Joseph M. Greer, president-elect, chairman of the program committee announces a very attractive series of papers so far secured. Dr. D. F. Harbridge, secretary of the State Association and Dr. Frank J. Milloy from the Maricopa Medical Society, are the other members of the Program Committee. Headquarters will be at the Hotel Westward Ho, where all scientific sessions will be held.

The preliminary announcements include papers by Drs. Samuel H. Watson, of Tucson, John W. Flinn of Prescott, John E. Bacon of Miami, Allen K. Krause of Tucson, Victor Randolph and W. Warner Watkins of Phoenix, A. C. Kingsley of Phoenix, C. T. Sturgeon of Los Angeles, and several others. Complete program and announcements regarding special features will be published in our March issue.

ARIZONA PUBLIC HEALTH ASSOCIATION

The Third Annual Meeting of this Association will be held in Phoenix April 15 and 16, the two days immediately preceding the convention of the Arizona State Medical Association. A very interesting program is being planned, with general and special sessions of interest to health officers, physicians, dairy inspectors, sanitary inspectors, water and sewage plant operators, and health nurses. Dr. H. T. Southworth, Prescott, is president of the Association, and Miss Jane Rider, of the State Laboratory, Tucson, is secretary. Further details of the program will be given in next month's issue of this journal.

THE GATEWAY CLUB OF EL PASO

The Chamber of Commerce of El Paso believes in advertising the community as a health resort. This phase of its work is carried on by what is called the Gateway Club, whose president this year is Dr. C. M. Hendricks. This Club has issued a very remarkable Climatological Data Chart, showing in a very brief and comprehensive manner the facts about climatic conditions in El Paso and thirty-four other cities of the United States. Included in this folder chart is a map showing the percentage of sunshine in various areas of the southwest. The Gateway Club and Dr. Hendricks deserve the compliments and thanks of the medical profession of the southwest for this compilation of data. The folder is made up in such size that it will fit into the ordinary letter file, with projecting margin so that it can be filed and easily referred to. It is intended to focus the eyes of physicians of the entire United States on El Paso as the health center of choice in the southwest.

GOOD WORK BY ARIZONA STATE HEALTH DEPARTMENT

The securing of aid from the United States Public Health Service and the Rockefeller Foundation for epidemiological work in Arizona has enabled Dr. R. J. Stroud, State Superintendent of Health, to begin some much needed work in that state, without having to wait for legislative appropriations. Dr. West, who has been working in Maricopa County, will have active charge of the epidemiological work throughout the state, being assisted by a competent corps of nurses. Dr. West is a thoroughly competent epidemiologist. In Maricopa County Dr. West made a start in a constructive program, and that county will probably be included in the general state work.

The monetary aid for this work was se-

cured by Dr. Stroud through personal conference with officials of the Rockefeller Foundation and the Public Health Service, and is an unusual concession on their part.

PROPOSED CHANGES IN CHEMICAL TARIFFS

"The German I. G. and the European Dye Cartel, dominated by the German chemical monopoly, will the committee recommends the following outline be the only beneficiaries of any change in the present methods of assessing duties on coal tar chemicals. The losers will be the American people and the forty-five American coal tar chemical manufacturers, who, under the present tariff act, have built up an industry that is indispensable to the health, the prosperity and the national defense of our country. Foreign valuation on coal tar dyes imported into this country will mean the end of the American coal tar chemical industry."

Thus The Chemical Foundation introduce their brief of objections to the proposals that the tariffs on foreign made drugs and chemicals be based on foreign valuations and prices. It seems to be a matter in which the medical profession is vitally concerned. Those who recall the days when salvarsan went off the market because it was made only abroad and its importation into this country stopped, or who recall the days when bacteriological stains could be secured only from abroad, —and who will compare those days with the present ease of purchase and low price of arsphenamine, and the high quality and low price of American made aniline dyes, will not desire any change which will cripple the chemical industry in America. The brief above mentioned closes its argument with the following significant statements:

"The American coal tar chemical industry is indispensable to the health, the prosperity and the national defense of the American people. Coal tar dyes are indispensable also in research into the cause, prevention and cure of human diseases. Foreign valuation will mean a return to the shocking conditions which prevailed in this country during the late war, when the United States had no coal tar chemical industry and was entirely dependent upon Germany for the dyes indispensable in industries having an annual production of several billions of dollars of goods, and for many important medicines to alleviate human suffering and to prevent death."

The picture is probably drawn with bold strokes, but undoubtedly the medical profession should be directly interested in retaining the present tariffs,—or method of computing tariffs,—in order to protect the chemical and drug industry in this country.

HOSPITAL SERVICE FOR PATIENTS OF MODERATE MEANS

A pamphlet has been issued by the Committee on the Cost of Medical Care presenting in abstract form the information gathered by the Committee regarding the special facilities and financial adjustments provided by certain hospitals in the United States and Canada for those patients not accepting, or not elegible for, charity service, but who, at the same time, cannot pay the rates usually charged for private service. Either the abstract or the full report of eighty pages will be sent to any person especially interested, if application is sent to the Committee headquarters at 910 Seventeenth St., N.W., Washington, D. C.

DALLAS CLINICAL CONFERENCE

Doctors in New Mexico and western Texas should be interested in the advertised Clinical Conference and Postgraduate Course to be held in Dallas, April 15 to 19. Men of national reputation will be present to give lectures and clinical addresses, the forenoons being given up to clinics. The dates coincide with the Arizona State Medical Association, so that the doctors of Arizona will not be able to attend, but many members of the profession from New Mexico and western Texas no doubt will take advantage of this clinical conference.

GRANT COUNTY (N.M.) MEDICAL SOCIETY ANNUAL MEETING

The annual banquet and business meeting of the Grant County Medical Society was held at Fort Bayard, N.M., on December 20th. The following officers were elected for the year 1930:

President, Dr. Wm. R. Washburn, Fort Bayard.
Vice President, Dr. V. K. Adams, Hurley.
Secretary and Treasurer, Dr. N. D. Frazin, Silver city.
Censors, Drs. N. D. Frazin, (Silver City), S. J. Mann (Fort Bayard) and R. J. Groom, (Santa Rita.)
Delegate to the annual meeting of the New Mexico Medical Society at Raton, Dr. R. J. Groom of Santa Rita.

EL PASO CITY-COUNTY HOSPITAL

The following staff officers have been elected for the year 1930:

President, Dr. W. R. Jamison.
Vice-President, Dr. S. H. Newman.
Secretary and Treasurer Dr. Shered L. Mengel.
Efficiency Committee, Dr. T. J. McCamant, Dr. J. J. Gorman, Dr. J. E. Morrison.
Chief of Medical Service, Dr. S. H. Newman.
Chief of Surgical Service, Dr. H. E. Stevenson.

HOTEL DIEU (EL PASO)

The following staff officers were elected for 1930:

President, Dr. R. L. Ramey.
Vice-President, Dr. W. P. Rogers.
Secretary and Treasurer, Dr. C. H. Mason.
Committee on Supervision of Records and Programs: Dr. J. J. Gorman, Chairman. Dr. H. H. Varner, Dr. E. W. Rheinheimer.

PERSONALS AND NEWS ITEMS

DR. WILLIAM A. KINGSLEY, formerly of Tucson, Arizona, has located in Phoenix, with offices in the Heard Building. He will practice his specialty of Diseases of the Eye, Ear, Nose and Throat.

THE SOILAND CLINIC of Los Angeles, announces that after January 1st, 1930, the organization will consist of the firm of Soiland, Costolow and Meland, with Doctors Bailey and Warner associated. Their work is devoted entirely to treatment by radiation.

DR. M. K. WYLDER, of Albuquerque, N. M., is attending the American College of Physicians, at their annual congress, in Minneapolis, Minn., the middle of February.

DR. FRANKLIN MARTIN, of Chicago, Director General of the College of Surgeons, is visiting in Phoenix for several weeks, staying at the Biltmore Hotel.

EL PASO COUNTY MEDICAL SOCIETY

January 27, 1930.

Meeting called to order by the president, Dr. Paul Gallagher, at 8 p. m. There were 48 members and 7 visitors present.

The president read the appointment of the following men as constituting the Certified Milk Commission for the ensuing year: Dr. J. A. Rawlings, Dr. Mattie F. Hill, Dr. R. H. Geer, Dr. A. P. Black and Dr. C. F. Rennick.

Dr. R. B. Homan stated that the chairman of the Program Committee, Dr. Ralph Homan, requested that members who expected to have papers for the state meeting notify him as soon as possible, as such papers must be first presented to the County Medical Society.

The program of the evening consisted of a report by the committee appointed to look into and to make suggestions in the matter of periodic health examinations of persons, in the interest of early diagnosis, detection and treatment of disease, and papers on this subject by Major Dailey and Dr. McCamant.

The committee, of which Dr. Laws was chairman, consisted of Drs. Laws, Cathcart, Swope, McCamant and Newman. It was the unanimous opinion of this committee that periodic health examinations should be encouraged, that they should be complete and that they should be made on some accepted form that covers the subject from all possible angles of disease. General blank forms of this character were submitted, including those of the A. M. A., of the U. S. Army, any of which were satisfactory. It was recommended that these forms be filled in duplicate, one copy to be filed by the examiner and the other to be given to the person examined without extra charge. It was the opinion of the committee that a fee of ten dollars for such an examination would be just and reasonable. This charge, however, would not include any fees to specialists, were examination by them deemed necessary, nor would it include any laboratory examination other than a qualitative analysis of the urine for detecting the presence of albumin and sugar. The committee recommends the use of the radio, the press and talks before civic organizations in the furtherance of the program for general periodic health examinations.

This report of the Committee was unanimously adopted on motion made by Dr. R. B. Homan.

MAJOR DAILEY, of William Beaumont General Hospital, then read a paper entitled "Annual Physical Examination in the Army." He stated that such an examination was made with a double purpose. Primarily it was for detecting in their early stages physical defects for the purposes of correction, that the officer might be better fitted for the service; and, secondly, for the purpose of detecting defects that had advanced to such a stage as to disqualify the officer from the service. Such examinations had their starting point in 1907, when President Roosevelt discovered that many officers were getting "stale" and not keeping physically fit. He then issued an order requiring all officers of the grade of major and below to make forced marches on horseback of thirty miles on three successive days. In the army only the past year's medical history is obtained, as other years are already a matter of record. Two courses of antityphoid inoculation are required at three year intervals and smallpox vaccination every three years. Hernia is mandatory for operation. Wassermanns or Kahn tests not ordinarily done, only on admission to the army. A complete urinalysis is done only if it is available at point of examination, or if albumin is found present, or some other sign of kidney disease. The value of the psysical examination depended on the knowledge, skill and thoroughness of the examiner. He did not think that group examination offered any advantage over that of a single conscientious examiner. He stated that he found that officers were eager to come up for subsequent annual examinations as they found their first one had been beneficial to them.

The second paper of the evening covering annual physical examniations was read by DR. McCAMANT. He stated that in the past few years so much publicity had been given to this subject that the laity, at least, is becoming thoroughly convinced of the benefits to be derived from such an examination, but that in the medical profession itself there were still many "doubting Thomases." He called attention to the reduction in infant mortality and to the reduction in the death rate of expectant mothers due to the Sheppard-Towner Act; to the improvement in physical and mental growth in school children since they have been under health control and to the reduction in death rate in large industrial plants, the time saved for actual labor, etc. on account of the supervision by the industrial surgeon and the industrial nurse. He thought the time was at hand when the physician should be a teacher as well as a healer As to the ability of the average physician to make a thorough physical examination, there was no doubt in his mind but that any of us were fully competent. He thought that we should have uniform blanks for such examinations and that the person examined was entitled to a copy of the findings if so desired and that such a copy should also carry a summary of defects found and recommendations as to their relief.

The discussion of both these papers was opened by DR. LAWS. He was thoroughly convinced as to the soundness of such examinations for the public's own welfare, that when this Society went on record as endorsing such a movement it would raise itself in the opinion of the general public. He also believed that any member of this society is thoroughly competent to make such an examination. He thought that a uniform blank was necessary and that the patient should be given at least a summary if not a copy. He suggested that abstracts of both papers read should be given to the newspapers.

MAJOR GANDY: In a period right after the war, a large number of officers were found having considerable physical defects. This number has grown less and less with each succeeding year, showing that the physical condition of the officers has improved, undoubtedly through correction of defects previously found. The same thing would occur with the general public.

RESEARCH FACILITIES

ENTRANCE TO THE LILLY RESEARCH LABORATORIES

A university investigator working in the Lilly Laboratories expressed surprise at the resources available for research. Practically any chemical or other material needed was obtainable from the stock rooms, the apparatus required was at hand, the Lilly Library afforded the necessary references.

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DR. WAITE: A copy of the blank should always be given the person examined for various reasons, one being that he may live out of town and such a report would be of a help to a physician in making a diagnosis should he become ill. He suggested holding a clinic here to demonstrate to local physicians the modus operandi of such annual health examinations. He also suggested that the society have copies of the proposed blanks printed in the newspapers together with the cost of such an examination so that the public know what to expect. He thought also that the radio would be of help in bringing this matter before the public. He believed that the blank should be a uniform one.

DR. CATHCART thought that the public is ready and willing and that all it needed was for us to get busy and push it along.

DR. EGBERT. At a Bar Association meeting last week, a distinguished guest remarked that the medical profession was among the few professions that had kept up with progress. He wished this was fully so, but it is not. Heretofore we have been only interested in treating the sick and not caring about the well. Also, the treatment has not kept pace with our ability to make diagnoses. Why not take the public in our confidence and admit to them that it is easier for us to help keep them well, if they will give us the chance, than to get them well once they are sick. Send out cards to your clientele urging on them these annual health examinations.

DR. RAWLINGS believed that health examinations should extend from the cradle to the grave. That the most important part of this examination is in infancy and childhood. By carefully watching the infant and child and correcting any defects that might develop, when manhood or womanhood is reached few defects are apt to manifest themselves.

DR. MILLER: Quoted from the "Life Extension Institute." Out of 100,000 native-born white adult males, all of whom had previously been examined for life insurance and were now re-examined.

Forty-five per cent were found to have infected or diseased tonsils.

Thirty-nine per cent had defective teeth.

Six per cent had hernias.

Two per cent had enlarged hearts.

Two per cent had mitral regurgitation.

Eighty-five per cent of these examinations were made by doctors in the field.

DR. McNEIL: He has been sold on the idea of health examinations and has been doing this kind of work since 1913. Five or six years ago he read a paper to the County Society on "Keeping the Well Well." You could not expect every doctor to become interested in this any more than you could expect him to be interested in other specialties. Only those so interested would attempt it. But the point now is to get the public interested in the value of such examinations. The ones coming now are mostly past middle age and are too old to be really benefited. Is in favor of only giving the patient a summary of your findings and advice as to corrective measures.

R. SWOPE: Thought that in the A.M.A. blank there should be a space provided for the hemoglo-

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New Equipment

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CLINIC
NERVOUS AND MENTAL
DISEASES
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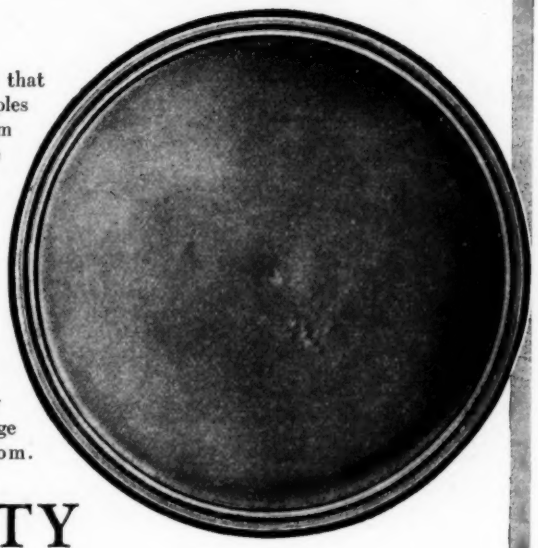

Every day that Dextri-Maltose is manufactured, control samples for bacteriological analyses are secured from certain points in the process which experience has shown give an accurate picture of the bacteriological condition of the product in the different steps of its manufacture. As a result of experiment and experience, it has been demonstrated that by exercising certain strict sanitary control measures and precautions, the bacteria count can be reduced to the point where the finished product approaches practical sterility. The Petri-dish at right shows a plate count of only 40 bacteria per gram, obtained from a package of Dextri-Maltose selected at random.

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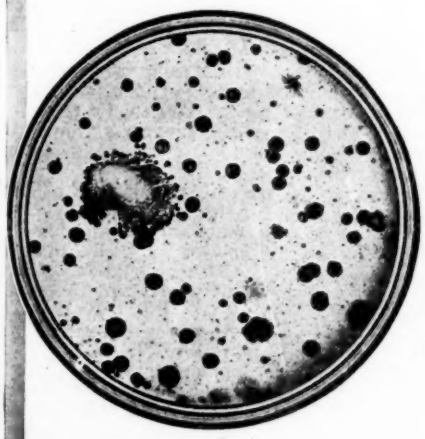
The things unseen determine the cleanliness, uniformity and safety of Dextri-Maltose. From years of study and experience, we know how to produce the bacteriologically clean product indicated above.



On the other hand, the Petri-dish at the left visualizes the potential danger that may accompany lack of experience. At 37° C., this sample (bought in the open market) showed a bacteria count of 420,000 per gram (compared with 40 per gram in Dextri-Maltose, as mentioned above). Every physician is deeply concerned about the pasteurization, certification, etc., of the cow's milk his babies are fed on, but even sterile milk would give the infant *over seventeen million* bacteria per daily feeding when "modified" with a carbohydrate such as is represented by the Petri-dish at the left.

MEAD JOHNSON & COMPANY, EVANSVILLE, INDIANA, U. S. A.

bin percentage. Other than that, he thought it answered every purpose. He allows the patient to fill in the History form himself and then in reading it over underscores with red ink points that need correction, that he may have them before him in making the examination. He believes in a uniform blank and that the patient should be given a copy.

MAJOR DAILEY: In closing the discussion said that if the examination is made thoroughly it is the same in the army as in civil life. It simply resolves itself into preventive medicine. The more examinations a doctor makes the more proficient he wlil become and the better satisfied client or patient will he have and he will eventually make a reputation for himself. Believes with Dr. Rawlings and Dr. Egbert that the patient must be taught to come back year after year and that to do the most good you must start with them young. As time goes on these examinations will become a routine in family life.

DR. McCAMANT in closing said he believed Dr. Waite's idea of having a clinic for instruction of doctors was a good one. He also agreed with Dr. Egbert as to taking the public in our confidence. He thought the work done in the free school clinic proved Dr. Rawling's idea. He also asserted that there was a business reason in giving a copy of the health examination to the person examined. It would create a desire in the other members of the family to have one. As to which form is used ,he thought it was not so much the blank but the conscientious examiner that counted.

Dr. Cathcart made a motion, seconded by Dr. Laws, that the Secretary make arrangements with a bookstore or the Southwest Surgical Supply Company to keep on hand a supply of A.M.A. "Periodic Health Examination" blanks, so that they would be available for all members of the Society. Motion carried.

Dr. Homan made a motion that the Society go on record as endorsing periodic health examinations. Seconded and carried.

Dr. Laws made a motion that the secretary be instructed to give a synopsis of this evening's program to the press. Seconded. Motion amended by Dr. Egbert that the Secretary also be instructed to have printed in all three local papers a copy of the A.M.A. blank, stating that this was the blank adopted by the Society for such examination and stating the fee to be asked for such examinations, this to be in as an advertisement. Amendment seconded and carried. Dr. Laws' motion put to vote and carried.

Applications for membership by Dr. Frederick J. Fanning, Dr. Hugh Earl Rogers and Dr . Mildred Lee Merray were unanimously accepted.

Drs. Laws, Cathcart, Swope and McCamant were appointed as a Committee to find ways and means to give members of the Ladies' Auxiliary annual health examinations. The Committee immediately reported that its findings were to tell the ladies that any member of the Society, including the Staff of William Beaumont Hospital, would be glad to make such annual examinations.

The meeting adjourned at 9:50 p. m.

EL PASO COUNTY MEDICAL SOCIETY

January 13, 1930.

There were 64 members and four visitors in attendance. Dr. Paul Gallagher, President, announced the appointment of the Program Committee as follows:

Dr. Ralph H. Homan; Dr. Chester D. Awe; Dr. John E. Morrison.

Applications for membership by Drs. W. R. Curtis, R. F. Thompson, A. P. Black, B. H. Britton and C. F. Rennick were accepted.

The paper of the evening, "Etiology of Pellagra" was read by DR. FRED LESLIE. Dr. Leslie discussed very thoroughly, (1) the maize theory; (2) the silica theory; (3) the insect theory; (4) the infectious theory; and (5) the dietary theory. His summary was:

1. The etilogy of pellagra is still unknown.
2. That Indian maize and silica play no part in its cause.
3. That no specific organism has as yet been isolated.
4. The pellagra to become endemic or epidemic depends on the diet of the community.
5. That pellagra may be caused by bacteria normally in the intestinal tract, elaborating a toxin which flourishes under a long continued low protein diet and cause pellagra.

Discussion was opened by Capt. Pratt, who stated that mild nervous and mental manifestations often precede the digestive symptoms by weeks and months. Two per cent of pellagrins manifest insanity. Pellagra in the insane magnifies their mental symptoms. Nervous manifestations vary from mild paresthesias to acute delirum and fulminating type of paresis. The histopathological investigations reveal no involvement of the sympathetic nervous system, but only a cellular neuritis and a sclerosis of the nervous tissues.

DR. LESLIE SMITH discussed the skin manifestations. He spoke of border line cases wherein the skin lesions are hard to find and should be searched for in cases of stomatitis. The border line cases and secondary or pseudo-pellagra should be treated as true pellagra and proper diet may prevent its development. Secondary or pseudo-pellagra sometimes follows chronic alcoholism or surgery with incomplete obstruction.

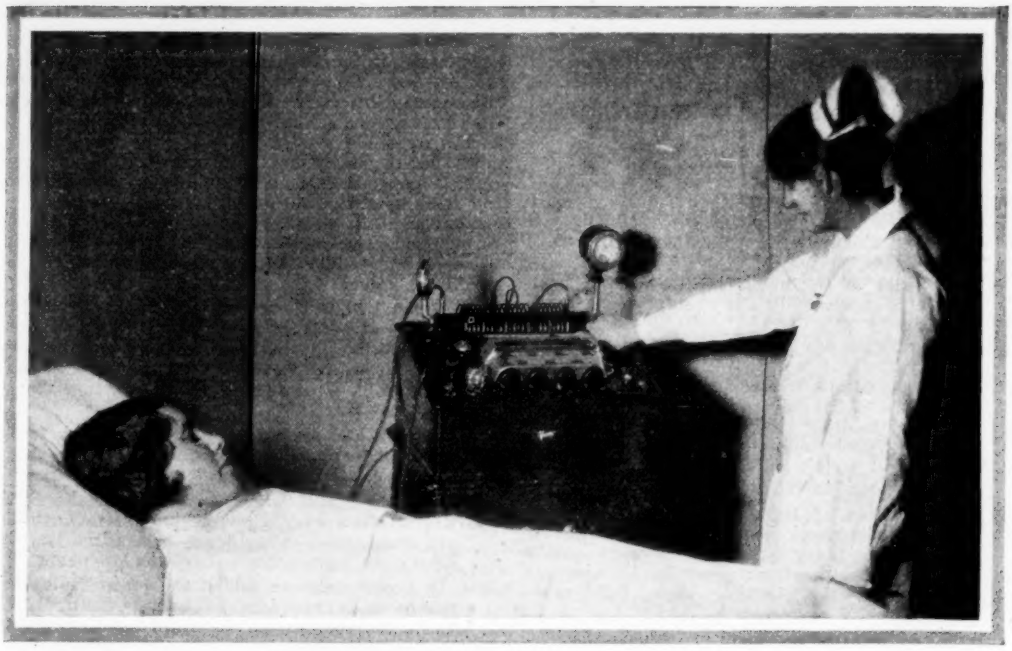
DR. GARRETT spoke of cases occurring in our immediate valley coming from conditions where you would hardly expect to find it. He thought that it undoubtedly was a deficiency disease and that any one presenting a picture of deficiency or emaciation, whether with a diarrhea or not, should be carefully examined for obscure areas of skin manifestation. In treatment, most of the cases that are not too desperate even in diarrhea cases, respond readily to a basic diet consisting of tomato, cabbage and spinach juice, milk, eggs, butter, cream. Other treatment is rather indifferent.

DR. SWOPE reported that in a three year experience in Mexico, on a high plateau, with about 5,000 Mexicans under his supervision, he never encountered a single case of pellagra, although the diet of these people consisted almost wholly of corn, beans and alcohol.

DR. McCAMANT spoke of the analagy of pellagra to Black Tongue in dogs; that ordinary canned salmon was found to cure dogs and so was tried on some pellagrins in an institution. Five to seven ounces was fed daily. All manifestations cleared up and there was no recurrence after 18 months on such a diet.

SITUATIONS WANTED

WANTED—Salaried appointments for Class A Physicians in all branches of the Medical Profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoes National Physicians' Exchange, 30 North Michigan, Chicago. Established 1896. Member The Chicago Association of Commerce.



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In the above illustration the apparatus proper is shown mounted on a floor cabinet, from which it may be lifted and conveniently taken in your auto to the patient's home.

A REPORT from the Department of Physiotherapy of a well-known New York hospital, dealing with diathermy in pneumonia and its sequelae, states as follows:

"As a rule diathermy is indicated in acute pneumonia, especially so when the symptoms are becoming or already are alarming: the temperature is high, the patient is delirious, the pulse is extremely rapid, cyanosis is deep, the respiration rate is high, the breathing is very shallow, and the cough remains unproductive. Not infrequently in a pneumonia case with such alarming symptoms, after a few diathermy treatments an entire change of the picture takes place: cyanosis lessens, respiration becomes deeper, the quality of pulse improves, the rate decreases, the temperature is lowered, and the cough becomes productive. Auricular fibrillation that develops occasionally in similar pneumonias or other types of pneumonia where the toxemia is great, has been changed to a perfect normal rhythm after a few diathermy treatments."

You will value diathermy as an ally in your battles with pneumonia at this season, aside from the satisfaction derived from having utilized every proved therapeutic measure that present day medical science offers.

A reprint in full of the article above quoted, also reprints of other articles on this subject, will be sent on request.

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OFFICIAL HEALTH PROGRAM WOMAN'S AUXILIARY OF THE AMERICAN MEDICAL ASSOCIATION

I. PUBLIC HYGIENE.

Fundamentals upon which Auxiliary work for improvement of pubilc hygiene should be based:

(1) **Recognition of the fact that** public health work is a highly technical job, requiring scientific, technically trained workers. That health work undertaken by lay women with no knowledge of the public health problem as a whole is necessarily fragmentary and ineffective.

(2) **Recognition of the fact that** every state, county and city is entitled to a scientific full-time health department (organized not to treat the sick, but to prevent disease and promote health), adequately financed, free from political domination, and providing continuity of service to a trained personnel so long as work is efficient.

(3) **Recognition of the fact that** the first and most fundamental job for lay organizations like the Auxiliary is to secure such scientific full-time health departments and adequate health protection, in their state, their county, their city or town.

(4) **Recognition of the fact that** where efficient, full-time, scientific health departments do not exist (and only about ten per cent of the rural districts of the United States have anything approaching adequate health protection), health activities must be initiated and carried on by volunteer unofficial agencies; but that all such work should be so planned and administered as to serve as stepping-stones toward the full-time official health department, and that when the full-time official health department, with workers trained for public health work, has become an accomplished fact, lay organizations should support and cooperate with the official workers and should be willing to take orders from them.

(5) **Recognition of the fact that** no health department, state, county or city, can do effective work without intelligent cooperation of the public; that such public cooperation depends upon wide-spread health education; that lay organizations can do this educational work, and are needed for it; and that the Auxiliary can be one of the most valuable tools for an official health department to use in this work, because it can by its education of the public concerning the official health department's work and needs, be the means of gradually eliminating or preventing political interference with an efficiently working department, and thus insure to it uninterrupted public service.

Most volunteer agencies do not yet realize the wastefulness of their individualistic efforts. One of the first things the Auxiliary should do is to work for a change of attitude in other volunteer women's organizations.

Health officials know that it is not always the work which makes the greatest emotional appeal to the public which most needs to be done. Unfortunately, most women do not know this. This is something the doctors' wives might well undertake to teach other women.

The National Auxiliary recommends, therefore, that each State Auxiliary undertake, under the direction and with the help of the Public Health Committee of the State Medical Association and of its Advisory Council a study **first of all** of the fundamental principles of health promotion and disease prevention; second, of the set-up considered essential by public health experts for an effective state health department, of qualifications of personnel, adequate budget, and the like; and third, of the state health conditions; that it devise means of acquainting all the state board members with the result, and that recommendations for educational work by the county Auxiliaries be based upon the conditions found.

In states where all is well and where time has developed good official health machinery and good health conditions, general knowledge of the fact will tend to prevent interruption of the excellent work, and will be a source of satisfaction to the women of the state.

In those states where there is much yet to be done, this investigation will indicate what sort of work needs doing first. For example:

(a) In those states which are not in the Birth Registration Area, the Auxiliaries would, without doubt, wish to tackle, as their first job, the ninety per cent birth registration problem.

(b) In those states in which the state health department believes the "County Health Unit" to be the solution of the rural health problem, the county auxiliaries should be encouraged to take as their chief work such persistent and wide-spread education of the public as will gradually create a general demand for the full-time county health department.

(c) In those states where the rural work is directly done "long distance" by the state health department, the county auxiliaries, if willing to work, and work under the directions of the state health department, can carry on intensive local health education work which would be impossible for the state department without intelligent local cooperation.

To those auxiliaries which agree with these ideas of study:

(1) Vital Statistics. Their value .
Compare the vital statistics of the state with those of other states.
Compare the vital statistics of the different counties of the state.
Compare the vital statistics of the cities with other cities in the state, and in the United States.

(2) The State Health Department; its organization; and program:
(a) For general state work.

No Starch
Listers
CASEIN-PALMNUT
Dietetic Flour
Starch-free Diabetic Foods that are appetizing are easily made in the patient's home from Listers Flour. It is self-rising. Ask for nearest depot or order direct.
LISTER BROS. Inc., 41 East 42nd St., NEW YORK

(b) For cooperating with the counties in improving county health conditions.

(3) The value of the Public Health Nurse.

(4) The County Health Unit as a possible solution of the rural health problem.

Community-wide Conditions Which Affect Health.

(5) Milk:
Milk standards, why necessary, what milk standards your community needs. How are these needs being met?

(6) Housing:
Your community housing laws.
Housing conditions as they have developed under these laws and as they affect health.
Improvements needed.

(7) General Sanitation and its relation to the death and morbidity rates.
Sewage disposal.
Water.
Garbage.
Flies.
Dust and street cleaning, etc.

II. PERSONAL HYGIENE.

The improvement of personal hygiene in any community is almost entirely a matter of education. Here again the Auxiliary members must first educate themselves before they can take a safe part in educating the public. The committee therefore recommends that the Auxiliary study programs shall include such subjects as:

Health Promotion:
Prenatal care.
Child welfare—infant and pre-school hygiene.
School hygiene.
Mental Hygiene.
Social hygiene.
The advantage to the public of general compliance with health regulations.
The periodic health examination.
Control of communicable diseases.

The entire program should close with a survey of all the private agencies doing health work in the community, and a discussion of the possibility and desirability of centering the direction of all such work in a full-time, scientific health department, under which the private agencies, while still maintaining their identity, would work in complete cooperation.

PROPAGANDA FOR REFORM

More Misbranded Nostrums. The following products have been the subject of prosecution by the Food, Drug and Insecticide Administration of the U. S. Dept. of Agriculture which enforces the Federal Food and Drugs Act: Yumco Tablets (The Yum Products Corporation) containing sodium salicylate, acetphenetidin (phenacetin), baking soda, phenolphthalein, a trace of alkaloids and a laxative plant drug extractive. Kelp-O-Lite (Pacific Kelp Products Company, Inc.) consisting essentially of aluminum sulphate and water, with traces of calcium, iron, potassium and sodium compounds, benzoic acid and chlorides. Dakol Nasal Cream (New Haven Laboratories, Inc.) consisting essentially of petrolatum, with one-fourth of 1 per cent of chloramine-T, volatile oils including menthol and a small amount of saponifiable fat. Sun and Moon Sacred Ointment and Sacred Herb Oil (A. W. Lowrie, Inc.) consisting essentially of a petrolatum and fatty acid vase, with oils of sassafras, spearmint and wintergreen, while the herb oil consisted essentially of olive oil with oils of sassafras, spearmint and win-

DOCTOR

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tergreen. Flumonia (Fuming) Salve (Van Vleet-Mansfield Drug Company) consisting of a petroleum jelly containing small amounts of menthol, camphor and oil of eucalyptus. Mentho-Squillo (Mansfield Drug Company) consisting essentially of acetic acid, spirits of niter, menthol, a trace of red pepper, sugar, alcohol (6.8 per cent) and water. Chek-a-Cold Tablets (The Continental Drug Corporation) consisting essentially of acetanilid, red pepper and aloes. U-Rub-It (U-Rub-It Chemical Company) consisting essentially of petrolatum and bees-wax, with oils of eucalyptus, peppermint and sassafras, with menthol, oil of wintergreen and capsicum. (Jour. A.M.A., January 4, 1930, p. 50).

Viosterol versus Cod Liver Oil. Cod liver oil and viosterol solutions are by no means to be regarded as therapeutically equivalent. Cod liver oil cannot be replaced by the newer irradiated products except so far as the antirachitic factor vitamin D is concerned. Cod liver oil is also a carrier of the indispensible vitamin A. Furthemiore, cod liver oil contains digestible and assimilable fats. (Jour. A.M.A., January 4, 1930, p. 53.)

Resuscitations and Intracardiac Injections. The power to revive the dead is one that the physician is often, but vainly, expected to exhibit. The alleged miracles of such revivals by injecting epinephrine into the heart are always widely reported in the newspapers. Physicians who have heard of these alleged resuscitations are tempted to employ the same means. If the death was real, no harm and no benefit results. Revival follows sometimes, perhaps not because of the treatment but in spite of it. In such cases there is indeed grave danger that serious injury may follow from the treatment that the patient has received. The evidence seems conclusive that, if the patient revives after such an intracardiac injection, he would have revived without it. Intracardiac injection is not a justifiabele measure for resuscitation. (Jour. A.M.A., January 11, 1930, p. 107).

Pancretone, Another Nostrum for Diabetes. The Wabash Chemical Co. of Chicago exploits an alleged cure for diabetes called Pancretone. It also has as a side-line a number of other nostrums, such as Digestoids, Laxalets, Intesoids, Pilene, Virillo, Asthmatol, and Myrol. Pancretone is advertised on the free-trial treatment plan, common to diabetes cure quackery. According to the advertising for Pancretone, the diabetic who will take the preparation "requires no rigid diet regulation." He is told, however, that he must "not use Potatoes, White Bread, Sugar, Candy, Pie and Cake, Macaroni, Rice, Spaghetti and Beans, Dates, Figs, Bananas, Preserves and Jellies." The A.M.A. Chemical Laboratory examined a package of Pancretone consisting of tablets, and also a specimen of Laxalets and Digestoids. From its examination, the Laboratory concluded that "Pancretone" is essentially a "digestive tablet" containing an amyloclastic enzyme, to which has been added considerable calcium carbonate and corn starch; that Laxalets are essentially a laxative combination, suggestive of aloin, belladonna, cascara and strychnine; and that Digestoids are essentially a digestive combination suggestive of charcoal, baking soda, saccharated pepsin, pancreatin and aromatics. It is obvious from the report of the analysis that any beneficial results that may follow the Pancretone "treatment" will be due to the rigid diet restrictions that are part of it. Any preparation that is so advertised as to induce diabetics to treat themselves without the advice of a physician is a menace. Pancretone belongs to this class! (Jour. A.M.A., January 11, 1930, p. 124).

Phyllamin. According to the advertising of Menley & James, Ltd., Phyllamin is "A Delectable Concen-

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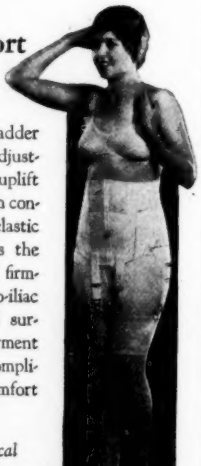

A new Camp garment particularly designed for physiological support following stomach or gall bladder operations. The Camp Patented Adjustment provides support and proper uplift where needed. It insures diaphragm control without restriction. The elastic insert at operative point supplies the required softness without loss of firmness, and gives satisfactory sacro-iliac support. Leading physicians and surgeons everywhere endorse the garment as a preventive of post-operative complications, and praise the extreme comfort it affords the patient.

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trated Tonic Nutriment" and "Presents Fresh Summer Spinach Juice Cold Expressed." The preparation is claimed to contain "Chlorophyll and all the known five Vitamin Factors" and to represent "all the Mineral salts of vegetables and fruits conserved in pure honey." As is the case with many proprietary preparations claimed to owe the value to the presence of vitamins, the advertising makes extreme claims for therapeutic qualities but contains nothing to indicate that determinations of the vitamin potency have actually been made. The preparation has not been accepted for New and Nonofficial Remedies. (Jour. A.M.A., January 11, 1930, p. 127.)

"Common Cold" Vaccines. The nearest approach to a final proof that infections of the upper respiratory tract usually grouped under the term "common cold" are due to an unknown filtrable virus has been made by Dochez and his co-workers. This unknown filter passer is not contained in any currently exploited "common cold vaccine." (Jour. A. M. A., January 18, 1930, p. 189).

Armstrong's Oxycatalyst. No scientific evidence worthy of the name appeared to sustain the claims for the Oxycatalyst, while there is increasing evidence that the exploitation of the product is much more concerned with economics than medicine. Two original ampules of Armstrong's Oxycatalyst were examined in the A. M. A. Chemical Laboratory. The contents of the Ampules were found not to hasten the discharge of a charged electroscope, indicating that the product was not radioactive. The Laboratory concluded that the specimens were nonradioactive preparations probably containing sodium chlorate, ferric chloride and sodium phosphate. (Jour. A.M.A., January 18, 1930, p. 208.)

Lukutate. This is another rejuvenating nostrum from the Orient via Germany. It seems to have run a somewhat hectic course in Germany. In due time, its value was correctly appraised, and the Germans appear to have relegated it to the limbo of futile fakes. Today, the Lukutate Corporation of America, is trying to convince the people of these United States that in Lukutate we have a rejuvenating substance of marvelous potentialities, but no definite information in regard to its composition is offered. It is stated that "The history of Lukutate is one of ancient lore and modern science, oriental jungle and European laboratory" and that "The basic ingredients are certain Indian fruits. . . " It is claimed that for hundreds of years these extraordinary fruits have been known to the natives and have been eagerly sought by tribes and even animals of all sorts. An aphrodisiac slant pervades the advertising. An imposing array of German and Austrian testimonials forms a part of the "come-on" advertising of Lukutate. However, articles in German medical and pharmaceutical journals indicate that physicians in that country are far fram being as enthusiastic over Lukutate as the American public is led to believe. The results of official investigation of Lukutate in Austria were to the effect that the main ingredients were fragula (buck thorn) and cascara sagrada and that, therefore, the Lukutate products were to be regarded as medicinal preparations and their sale seems to have been prohibited in Austria. In the United States testimonials for Lukutate seem, at present, to be much less imposing. The A.M.A. Chemical Laboratory examined specimens of Lukutate Tincture purchased from the Lukutate Corporation and found it to be essentially an aqueous-alcoholic solution of plant extractives, one of which is indicative of an emodin-bearing drug, such as cascara, senna, or buckthorn, nd containing a small amount of fruit sugars (fructose). (Jour. A.M.A., January 25, 1930, p. 281).

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Los Angeles References:

Dr. Mary L. Neff, Trinity Hotel

Dr. Samuel D. Ingham, Roosevelt Building

Effects of Cinchophen. Purpuric, urticarial, or scarlatiniform eruptions have been reported by many observers following the administration of cinchophen. They may occur with or without edema. Gastro-intestinal disturbances, from epigastric discomfort to acid eructations and heartburn, are the commonest expression of intolerance to cinchophen. These may be avoided by the giving of an abundance of water with the drug, and 1 Gm. of sodium bicarbonate, though the latter should be given separately and not mixed with the drug. By using neocinchophen, one may avoid usually the symptoms of gastric irritation. Sometimes cardiovascular disturbances have been noted. By far the most serious results of cinchophen intoxication result from injury to the liver, which may even go on to a fatal acute yellow atrophy. (Jour. A.M.A., January 25, 1930, Pp. 283.

Cod Liver Oil, Viosterol or Sunlight for Rickets. Cod liver oil, viosterol and ultraviolet rays are generally accepted as specific agents in the prevention and cure of active rickets in infants. Their relative merits are still under investigation. Cod liver oil contains the valuable vitamin A in addition to vitamin D. Viosterol is of advantage because of the ease of administration and its concentration. Ultraviolet rays are undoubtedly a valuable therapeutic agent when under controlled supervision. Their effect on general nutrition and resistance as well as on the calcium retention is good. Their use to the exclusion of vitamin D or viosterol seems unwise. A combination seems most desirable when sunshine is not available. (Jour. A.M.A., January 25, 1930, p. 283).

BOOK REVIEWS

TUBERCULOSIS AND HOW TO COMBAT IT (A Book for the Patient)—Francis M. Pottenger; A.M., M.D., LL.D., F.A.C.P.; Monrovia, California; Second Edition; St. Louis; The C. V. Mosby Company; 1928.

Men who have had much experience in treating tuberculosis realize that an understanding on the part of the paitent of the problems connected with tuberculosis is one of the most important agents operative toward full recovery.

There s probably no book and no pamphlet which will take the place of the physician's talks with his patient. A book written for the patient in language which the patient can comprehend can be of tremendous assistance to the physician. Such a book Dr. Pottenger has prepared. There are a number of such books on the market, but, probably none which excels this one. Pottenger has a very apt way of expressing his thoughts so that the lay man can understand them. He also knows what ideas and comprehensions the patient should have about tuberculosis.

Pottenger is a physiologist as well as a phthisiologist. The author does a great deal of writing but his manuscripts are not always as carefully edited as they should be. As we have said before, in reviewing some of his books, he needs some one who will closely edit his manuscripts. His punctuation is poor; however, these do not detract from the value of the book.

O. H. B.

THE OUTLINE OF PREVENTIVE MEDICINE—FOR MEDICAL PRACTITIONERS AND STUDENTS. Prepared under the auspices of the Committee on Public Health Relations, New York Academy of Medicine. 21 Contributors. Editorial Committee: Frederic E. Sondern, Chas. Gordon Heyd, E. H. L. Corwin; Paul B. Hoeber, Inc., New York. Price $5.00.

The Outline of Preventive Medicine is different from most books on the subject. The chapters deal with basic facts on the subjects treated. The contributors are all leading medical men and women of New York City or its environs. All are college teachers. Among the well known names are Harlow Brooks, Robert A. Cooke, Charles L. Dana, Alice Hamilton, Samuel W. Lambert, James Alexander Miller and others.

The book is splendidly edited and is well worth the reading of every person interested in preventive diseases.

O. H. B.

THE PHILIPPINE JOURNAL OF SCIENCE, Vol. 39, Nos. 1-4, May-August, 1929, is devoted entirely to Filterable Virus and Rickettsia Diseases, by Dr. Earl Baldwin McKinley.

Dr. McKinley presents this most fascinating subject in a comprehensive manner. The chapter on bacteriophage is particularly interesting. The entire volume is worthy of careful study.

It is paper covered, has 416 pages and an index and sells for fifty cents. It may be ordered through the Business Manager, Philippine Journal of Science, Bureau of Science, Manila, P. I.

O. H. B.

MEDICAL STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepp, M.D., Professor of Clinical Medicine in the Graduate School of Medicine, University of Pennsylvania. Sixth Edition, thoroughly revised. Octavo volume of 754 pages. Philadelphia and London: W. B. Saunders Company, 1929. Cloth, $6.00 net.

Those who find it necessary to prepare themselves for state board examinations commonly use this book and find it a great service. The first edition of this book appeared in 1908. Since this time it has undergone 24 reprintings, a testimonial to its usefulness.

O. H. B.

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Dr. Carl Mulky, Albuquerque (two years).
Dr. Dwight Allison, Las Cruces, (two years).
Dr. W. T. Joyner, Roswell, (one year).
Dr. H. A. Miller, Clovis, (one year).

EL PASO COUNTY MEDICAL SOCIETY

(Next Annual Meeting in December, 1930.)

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Associate Editor,—Dr. James J. Gorman.
Delegates to Texas State Medical Association,—Drs. W. L. Brown and T. J. McCamant; Alternates, Drs. W. W. Waite and R. L. Raney.
Delegate to American Association for the Advancement of Science, —Dr. E. C. Prentiss.

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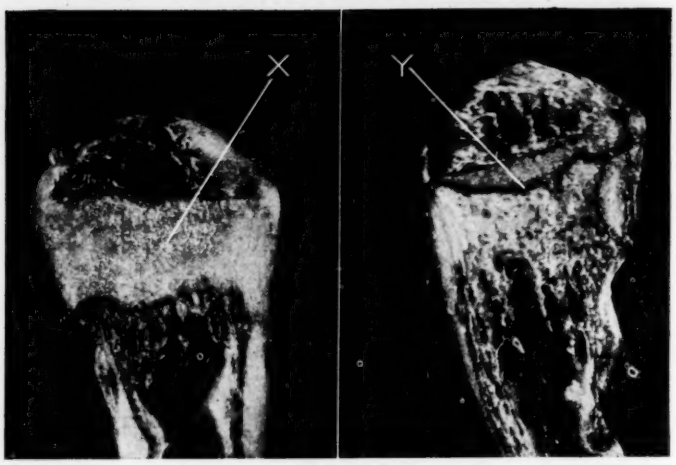

Illustrating "Line Test" method of standardizing Vitamin D content. At left, the leg bone of a rachitic rat showing induced decalcification area (X). At right, healing has begun, as evidenced by initiation of recalcification at dark line (Y).

HOW can vitamins be "measured?" What is meant by "standardized" when applied to Cod-liver Oil? Here, briefly, is the method followed in determining the vitamin content of Parke-Davis Standardized Cod-liver Oil:

To test for *vitamin A potency* the oil is given orally to young albino rats which have been fed on a diet free from vitamin A. We ascertain how much oil is needed daily to correct the induced typical eye condition (xerophthalmia) and to institute a specified rate of growth. The daily minimum amount of oil required to bring about this change constitutes one vitamin A unit.

Every lot of Parke-Davis Standardized Cod-liver Oil must contain not less than 13,500 units of vitamin A in each fluid ounce.

In determining *vitamin D potency* we use our quantitative adaptation of the "line test" technique of McCollum, Simmonds, Shipley, and Park. The oil is fed to young rats in which rickets has been induced. We measure the minimum amount of oil required per day over a period of ten days to initiate recalcification in the leg bones. This amount represents one vitamin D unit. Each fluid ounce of Parke-Davis Standardized Cod-liver Oil contains not less than 3000 vitamin D units.

Parke, Davis & Company was the first commercial laboratory to assay Cod-liver Oil for both vitamins A and D. Parke-Davis Standardized Cod-liver Oil is backed by years of research work in various phases of nutrition chemistry. Quite aside from its vitamin richness, this product has other distinguishing features which will appeal to you. It is clear, bland, and as nearly tasteless and odorless as a pure Cod-liver Oil can be. May we suggest that in prescribing Cod-liver Oil for your patients you specify the Parke-Davis product?

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